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Arris and Gale Lecture

ON

THE MODERN ENGLISH SKULL.

Delivered on Feb. 18th, 1918, at the Royal College of Surgeons of England,

BY F. G. PARSONS, F.R.C.S. ENG.,
PROFESSOR OF ANATOMY, UNIVERSITY OF LONDON, ETC.

MR. PRESIDENT AND GENTLEMEN,—It is a curious thing that one of the skull forms of which we know least is that of the modern Englishman. The reason, of course, is that we so seldom have the opportunity of studying it, since all the skulls in our dissecting-rooms are cut to pieces, while those which we use for lectures are collected from various parts of Europe. There are, however, in London a few skulls the identity of which is known, and one or other of these is often used as the type of an English skull, though not always the same one. I propose to begin this lecture by a short study of these skulls, with the view of determining whether they may all be regarded justly as typically English.

The first skull is that of Thurtell (Fig. 1), a man who was hanged early in the last century for a celebrated murder. He was a man above the average both in bodily and mental powers, and his skull appears to be excellently developed, except, perhaps, in the frontal region, but until we have something definite with which to compare it we can only give a tentative opinion which may or may not be of value.

To meet this want I determined to work out a series of composite contours of the six English male skulls to which I had access and of which the identity was known. These were the skulls of Thurtell, of Eugene Aram, of Charles Nichol, and of Jonathan Wild in this museum, of Professor Cullimore in the School of Medicine for Women, and of Giles Covington in the University Museum in Oxford.

DESCRIPTION OF METHOD.

The method adopted was the one which I suggested to the Anatomical Society of Great Britain and Ireland in 1910 and have now improved by a good deal of practice.

Projection contours of the side view, face view, and the vertex of each skull were made with a Martin's dioptograph, care being taken that the "Frankfurt plane," passing through the lower margin of the orbits and the upper margin of the external auditory meatus, was exactly horizontal. To obtain a standard or composite contour of the side view a series of radii were drawn from the middle of the external auditory meatus to the periphery at the various definite points indicated in Fig. 2. The direction of each of these was then determined by drawing a line from the lower margin of the orbit to the middle of the external auditory meatus, at which point a perpendicular was dropped upon it. The upward prolongation of the perpendicular gives 0°, the lower 180°, while the forward and backward productions of the original line indicate 90° and 270° respectively. With a simple protractor the angles of all the radii were now recorded. Next the length of each radius was taken, and it will now be found that if the lengths and angles of all the radii in the series to be averaged are respectively added together and divided by the number of skulls examined a framework can be set up on which the average contour of the series can be drawn.

If more than the mere contour—the orbits, zygomatic arch, sutures, &c., are wanted, more radii will be needed; indeed, the more numerous these are the more accurate will the average contour be.

In the face and top views Fig. 2 shows that a somewhat different method was adopted for which no protractor was needed.

The distance of each transverse line in the face view was taken from the nasion, while in the top view it was taken from the front of the skull. It is clear that only those parts of the standard indicated by dots in the diagram are definitely determined; the lines joining them depend on the eye of the draughtsman, but they have been planned in such a way as to give fancy as little play as possible.

A graphic mean may be obtained by superimposing two contours and drawing a third contour between them, and this, again, may be superimposed on the mean of two other skulls, thus obtaining a graphic mean of four skulls. I have used this method to check my arithmetically obtained mean and am quite satisfied of the substantial accuracy of the latter.

STANDARD CONTOURS OF MODERN ENGLISH SKULLS.

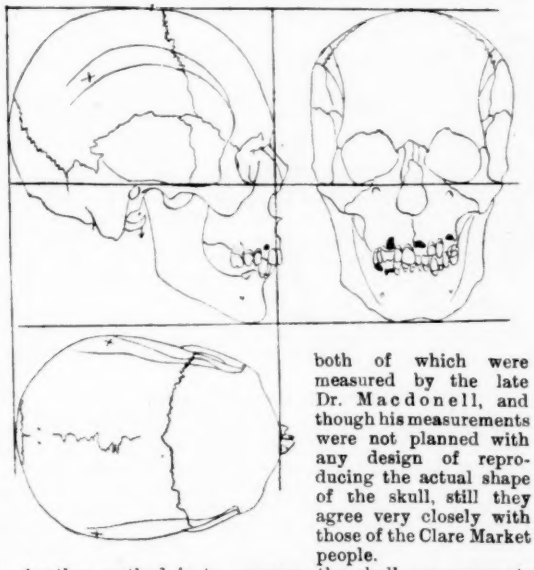
In this way the average contours of the six known skulls were obtained, but before I began to use them for comparison I keenly felt the need of a larger series of observations, and here Professor Arthur Keith came to my help and allowed me to work through a large series of modern English skulls which had been unearthed in the removal of King's College Hospital. From these I made standard contours of 60, 30 males and 30 females, the sexing being arbitrarily determined by Professor Keith and myself, with Mr. Finnerty's assistance.

These contours are shown in Figs. 2 and 3, and represent the result of over 7000 measurements. Of course, they should be studied with the actual tables of measurements in order that the range of variation may be taken into account, and some day I hope to be able to publish not only the measurements but the contours of each individual skull.

I was interested and pleased to find that the average contours of the six known skulls corresponded very closely with those of the 30 males from Clare Market, and I am hopeful that I have made a definite step towards standardising the modern English skull. The result may be checked in various ways, firstly by comparing such measurements as have been taken on other comparatively modern series of skulls with the same measurements in the contours.

The only two comparatively modern series with which I am acquainted are those from Moorfields and Whitechapel,

FIG. 1.—*Thurtell.*



both of which were measured by the late Dr. Macdonell, and though his measurements were not planned with any design of reproducing the actual shape of the skull, still they agree very closely with those of the Clare Market people.

Another method is to compare the skull measurements with those of living people, deducting 11 mm. for soft parts.

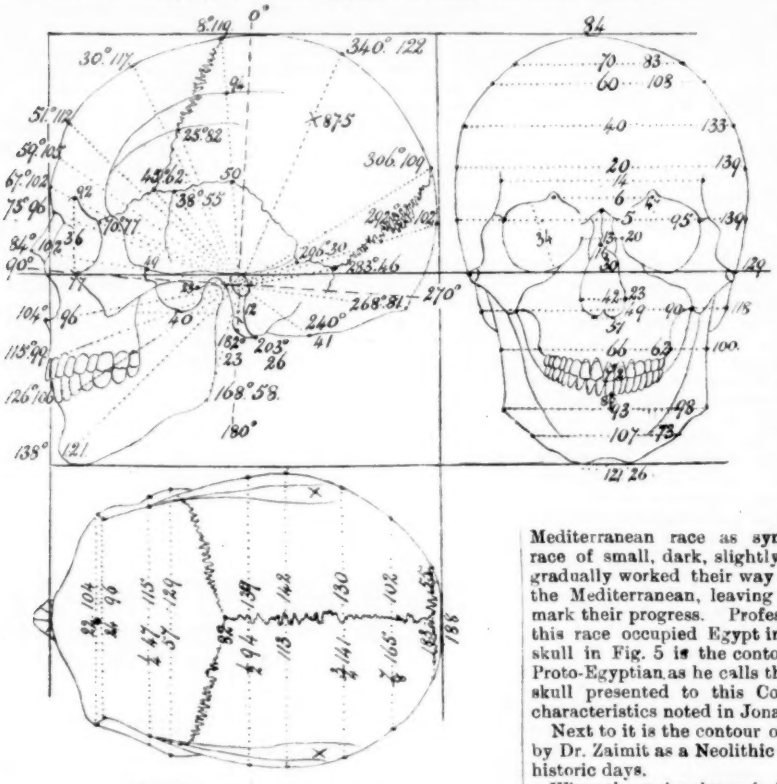
As an example of these comparisons the following table may be interesting.

Series of male skulls and skulls of living males.	Horizontal length.	Maximal breadth.	Cephalic index.	Auricular height.
30 Clare Market	188	142	755	116
135 Whitechapel	188	141	750	115
46 Moorfields	188	143	761	114
6 known skulls	190	140	737	118
100 St. Thomas's Hospital students ...	186	142	763	—
100 Bavarians	180 (about)	150	833	121
95 Würtembergers ...	180	148	822	115
300 German prisoners from this war ...	178	145	815	—
56 French soldiers (1870)	180	143	794	113

For my purpose it is much more important that I should have gained a fair standard of the shape of the modern English skull than that one or two selected measurements should be accurate, and the table only affords presumptive evidence that this is the case.

When the contours of the two sexes are contrasted it is useless to point out that the usual female characteristics of the smooth forehead, small mastoid process, &c., are present, because the sex of the skulls has been determined by these very things, but the sex value of the zygomatic arch has not been considered, and it will be noticed how much less prominent it is in the female contour when viewed both from the top and from the front. In the actual individual contours I found many more cryptozygous female skulls than male.

FIG. 2.—*Average of 30 modern English male skulls from Clare Market district.*



THE SIX KNOWN SKULLS.

In Fig. 4 the vertex views of the six known skulls are contrasted with one another and each is superimposed on the standard English contour which has just been obtained and is indicated by a dotted line It will be seen that Cullimore's skull fits the dotted line almost exactly, while Thurtell's, Covington's, and Aram's, although they do not fit at all accurately, reproduce the oval vertex of the English skull very well.

Nichol's skull, on the other hand, is much more circular, and the temples are so filled out that the zygomata cannot be seen. I have no doubt that Nichol was a case of reversion, or partial reversion, to the Central European or Alpine race, which is so well seen in the inhabitants of Germany and, Switzerland, as well as in the skulls of the Bronze Age or Round Barrows in this country and in those in the crypt of the church at Hythe in Kent. To this race time will not allow me to devote much attention now, though it undoubtedly played its part as one of the components of the modern English skull.

Wild's skull differs in another way from the standard contour. Instead of approaching a circular shape, it tends to be rectangular—that is to say, it is narrower behind the middle and broader in front than the modern English average, and the sides, instead of bulging out, are more nearly parallel.

But it is in the full-face view that Jonathan Wild contrasts most strikingly with the normal (see Fig. 5). In the first place, the vertex is higher; secondly, the skull is wall-sided instead of bulging out on each side as the standard does; thirdly, the orbits are low and horizontal in their long axis; fourthly, the malar bones are separated more from one another by the greater breadth of the maxillæ in the cheek region, giving the appearance popularly known as "high cheek bones"; fifthly, the face is short and the lower jaw in the mid-line has not the depth shown in the modern skull. Altogether Wild's skull has a very characteristic and sinister appearance, which impressed me at the time I first saw it, though I did not then recognise it as typical of any particular race.

One day, later on, in the University Museum at Oxford, I saw a number of counterparts of Wild looking at me from the shelves bearing the series of Long Barrow skulls collected by Canon Greenwell and Professor Rolleston; and then I realised that he was a reversion to a race which has certainly contributed something towards the formation of the modern Englishman, and now and then, probably according to the Mendelian law, reunites all its characteristics in one individual.

THE LONG BARROW TYPE.

The kindness of Professor Arthur Thomson enabled me to take many contours of these Long Barrow skulls, two of which I have placed with that of Wild in Fig. 5. These are one of the Cissbury and one of the Dinnington skulls.

It is usual to speak of the Long Barrow, Iberian, Neolithic, and Mediterranean race as synonymous, meaning thereby a race of small, dark, slightly-built, long-headed people, who gradually worked their way westward, along both shores of the Mediterranean, leaving their barrows and megaliths to mark their progress. Professor Elliot Smith has shown that this race occupied Egypt in predynastic days, and the first skull in Fig. 5 is the contour of a predynastic Egyptian, or Proto-Egyptian as he calls them, which I have drawn from a skull presented to this College by him, showing all the characteristics noted in Jonathan Wild.

Next to it is the contour of a skull from Malta, presented by Dr. Zaimit as a Neolithic inhabitant of that island in prehistoric days.

When the series shown in Figs. 5 and 6 is studied I cannot think that anyone would hesitate for a moment as to whether Wild is more like a Neolithic man or a modern Englishman, but I am a little doubtful whether I am acting quite fairly in putting a series of picked skulls on one side of him and a composite contour on the other.

COMPOSITE CONTOUR OF NEOLITHIC SKULLS.

The difficulty in making a similar standard contour of Neolithic skulls is, first, their rarity and the care with which

FIG. 4.

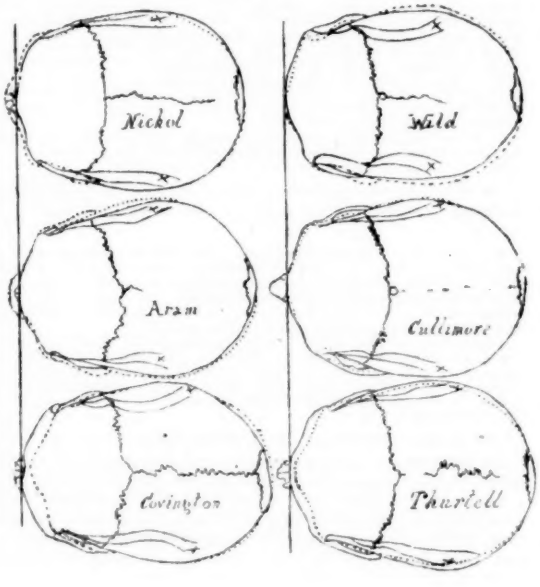
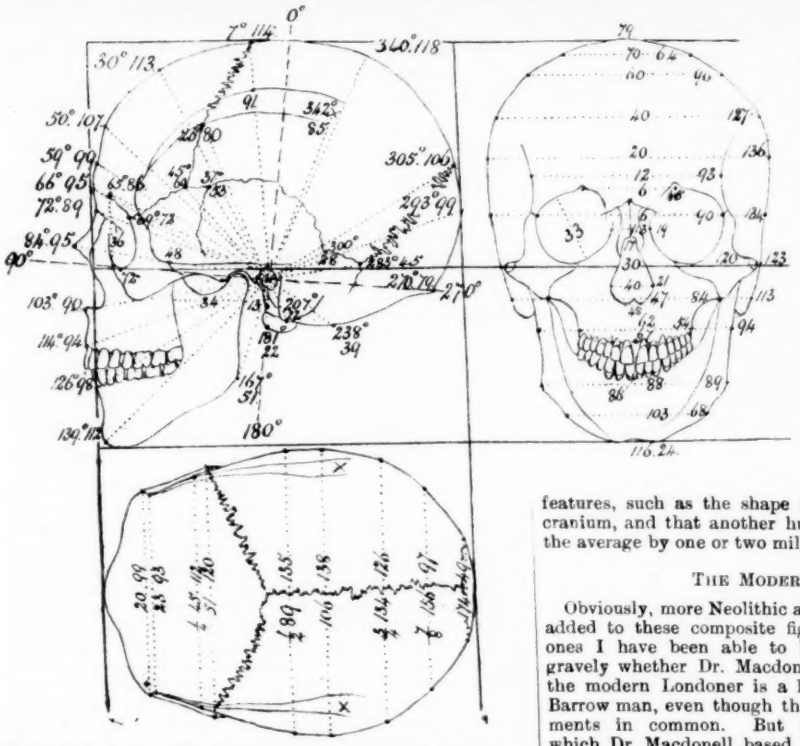


FIG. 3.—*Average of 30 modern English female skulls from Clare Market district.*



they are guarded; and, secondly, the difference of opinion among anthropologists as to what skulls may be regarded as Neolithic. For instance, the skulls found in the great Rodmarton barrow, near Tetbury, in Gloucestershire, are thought to be Ancient British rather than Neolithic by many.

I have made a series of contours, however, of 12 male skulls which I believe to be of this race, and have included some of the Rodmarton, but not enough to dominate the others. From these I have obtained a composite contour, which I have contrasted with the Modern English and Anglo-Saxon contours in Figs. 7 and 8.

The composite contours of these 12, although there were among them some which showed the Neolithic traits very feebly, is still a marked contrast to the Modern English skull, especially in the full-face view, while the Anglo-Saxon skull in the face view is almost identical with that of the modern Englishman, and it is only when it is looked at from above that its greater length is seen.

I am quite willing to admit that in generalising on a series of 12 Neolithic people and 18 Saxons I may be rash, but my experience is that with anything like a homogeneous series a composite contour of 10 skulls brings out all the characteristic features, such as the shape of the orbit, nose, face, and cranium, and that another hundred specimens only modify the average by one or two millimetres in either direction.

THE MODERN LONDONER.

Obviously, more Neolithic and Anglo-Saxon skulls must be added to these composite figures when obtainable, but the ones I have been able to handle make me doubt very gravely whether Dr. Macdonell was right in thinking that the modern Londoner is a lineal descendant of the Long Barrow man, even though they may claim certain measurements in common. But these very measurements on which Dr. Macdonell based his opinion would have made the Long Barrow man a still closer relation of the Anglo-Saxon.

If he had considered the shape of the orbit (he compared no measurements of the orbits), or of the face, or of the skull, instead of noting certain measurements which happened to be alike in the two series, he would, I think, have accepted the prosaic and likely fact that the modern Londoner differs wonderfully little in his head form from his Saxon ancestor, except that he has lost two or three millimetres in his skull length, but that every

FIG. 5.

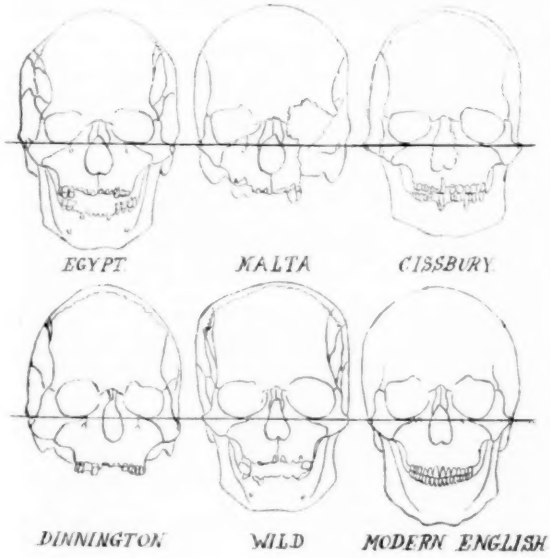
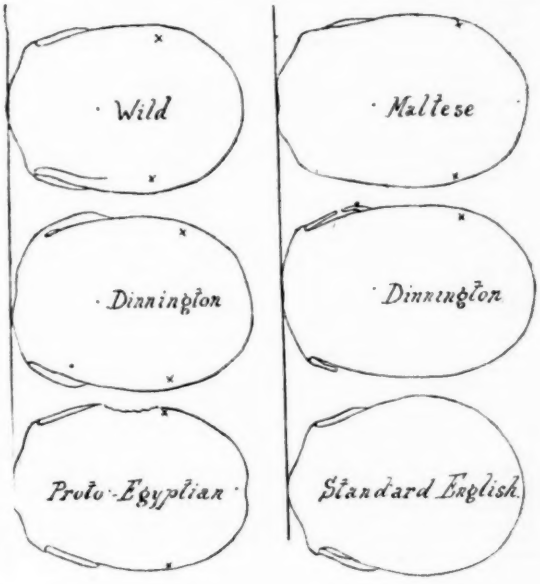


FIG. 6.

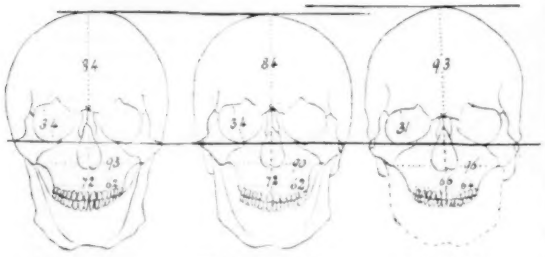


now and then he throws back to a typical Bronze Age man like Darwin, or to a typical Neolithic man like Jonathan Wild.

THE QUESTION OF MODIFICATION.

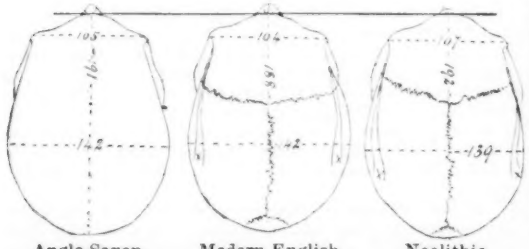
In conclusion, I should like to ask a question of those who hold that the modifications of skull shape are not necessarily racial, but are produced in any race as adaptations to similar functional needs. In other words, that if a Norseman, a Slav, and a member of the Neolithic or Mediterranean race

FIG. 7.



Anglo-Saxon, average of 15 males. Modern English, average of 30 males. Neolithic, average of 12 males.

FIG. 8.



Anglo-Saxon, average of 18 males. Modern English, average of 30 males. Neolithic, average of 12 males.

were to eat the same kind of food in the same way from infancy their skulls would take on the same type. I should like to ask them whether there is the least reason to believe that the habits or food of either Wild or Nichol differed from those of their fellow-countrymen; or whether there is sufficient difference in the food and habits of modern Englishmen to account for the English skull shape being nearly pure Nordic while the German is nearly pure Slav?

Is it not a more reasonable explanation that in our island, as in Norway, the brachycephalic, Alpine, or Slav blood has not had the chance of superseding and stamping out the Nordic?—which it has done, if German prisoners are any test, throughout the greater part of Germany.

THE LATE DR. ROBERT STEVENSON.—Robert Stevenson, M.D. Glasg., whose death occurred last week, was honorary anæsthetist to the David Lewis Northern Hospital, Liverpool, and had a wide private practice as an administrator of anæsthetics. He was also surgeon to the Post Office, the Diamond Match Works, and other industrial businesses, as well as medical referee to several important companies. As a sound medical witness in county-court cases his services were very much in demand. As a medical colleague he was ever ready to help any professional brother, though, like several other practitioners in Bootle, he was an uncompromising opponent of the panel system. Since the outbreak of the war his voluntary work at military hospitals proved a severe tax on a none too robust constitution, and the last duty he performed was giving anæsthetics at the hospital, practically dying in harness after a very short illness. The funeral took place at Bootle Cemetery on April 11th in the presence of a large and representative gathering of his colleagues, patients, and friends. He leaves a widow to mourn her loss.

DYSENTERY BACILLI:

THE DIFFERENTIATION OF THE TRUE DYSENTERY BACILLI FROM ALLIED SPECIES.

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(*From the Laboratories of St. Bartholomew's Hospital.*)

IN the bacteriological examination of cases of suspected dysentery and of convalescents it is a common experience to meet with organisms evidently related to the dysentery bacilli but not fully identical with them. Sometimes the difference is one of sugar reactions, at others it is serological, the organism either being inagglutinable, or agglutinating only to low titre, with stock antidysenteric sera. Such strains are often returned as "atypical" or "inagglutinable" Shigas or Flexners, as the case may be, but much doubt has existed as to their significance. Caution is necessary before assuming a causal relation with the disease, even when such atypical organisms are present in the stools in large numbers.

Very little work has been carried out on the bacterial species allied to the dysentery bacilli, and since many laboratory workers have been troubled in deciding how to return these aberrant forms in their reports, it appeared desirable that their characters should be more fully studied. By arrangement with Colonel Sir W. B. Leishman cultures were forwarded to me at St. Bartholomew's Hospital from several laboratories in France, and many have been obtained from home dysentery hospitals. Upwards of a hundred strains have been examined, including as many aberrant ones as possible, but with a sufficiency of genuine dysentery bacilli for comparison. It was hoped to investigate the pathogenicity of all the strains examined, but owing to the extreme difficulty of procuring rabbits only a few of the main types could be studied in this way. For the same reason only the stock sera in general use could be employed in the serological investigations; this side of the subject will be pursued as soon as a supply of animals is available. Meanwhile the cultural results, now almost completed, suggest certain conclusions which are put forward in this preliminary communication in the hope that they may be of service to workers in military laboratories.

I have to express my thanks to those who kindly sent me cultures; to Dr. Joekes, who helped me to carry out many of the sugar reactions; to Dr. R. G. Canti for invaluable assistance in making and titrating new media; and to Captain A. C. Inman, R.A.M.C., who undertook most of the agglutinations, and to whose experience and help I am much indebted.

Nomenclature.

Just as we name the "*coli* group" from its most prominent member, the general term "*dysentery* group" may be employed for the Gram-negative, non-motile bacilli which do not liquefy gelatin and which form acid but no gas in glucose media.

The *true dysentery bacilli* form only a section of this group. So far as present evidence goes, there are two distinct species of dysentery bacilli: (*a*) the Shiga or Shiga-Kruse bacillus which seems a fairly homogeneous entity; and (*b*) the group comprising the Flexner and Y types, which are apparently races of one species. To these it is possible that a third should be added—namely, the "Strong" type; but the material on which this paper is based does not allow of any conclusion on the matter. The sugar reactions supposed to distinguish the Flexner-Y races are now known to be inconstant in subculture, and the serological differences which undoubtedly exist are probably racial rather than specific. In the case of the Shiga and Flexner-Y bacilli the necessary criteria for assuming a causal relation with bacillary dysentery are satisfied. Not only are they present in the diseased intestine, but specific antibodies are developed in the patient's blood, while intestinal lesions can be produced in the rabbit by intravenous or subcutaneous injection of pure cultures.

These criteria are not at present satisfied in the case of other members of the "dysentery group," even when such organisms have been found present in considerable numbers in the stools. Some of them, however, are undoubtedly pathogenic for the rabbit, though without the definite production of true "dysenteric" lesions, and a relation with human disease may be demonstrable in the future; others appear quite non-pathogenic.

The great majority of the organisms which pass as "atypical" dysentery bacilli fall under three species or groups of species, which, so far as present evidence goes,

derive their importance from their liability to be confounded with genuine dysentery bacilli.

Since the characters of two at least of these three groups are fairly constant and well defined it is clearly desirable to give them specific names in place of referring to them as atypical or inagglutinable dysentery bacilli. The following names are therefore provisionally suggested, though they may have to give way should it be shown that prior descriptions exist.

1. *Bacillus ambiguus.* An organism resembling Shiga's bacillus, but forming indol and otherwise separable from Shiga by tests which will be given later. It has no demonstrable relation with human disease.

2. *Bacillus alkalescens.* An organism simulating Flexner's bacillus, but fermenting dulcite and producing alkali with much vigour. It appears quite non-pathogenic.

3. *Bacillus dispar.* This term is suggested as a convenient one for the lactose-fermenting organisms of the dysentery group. It is probable that more than one species comes under this heading, as some ferment lactose early and some very late. The latter are specially liable to be confounded with Flexner's bacillus. Some members of this group are decidedly pathogenic for the rabbit.

Descriptions of these three forms will be given later in fuller detail.

Tests Employed.

It will be convenient first to mention the tests employed in the study of this series of organisms, with details as to the precise technique.

Preservation of cultures.—Dysentery bacilli soon die out on ordinary agar. They may be kept alive for months in sealed tubes of Dorset's egg medium. The simplest method of checking evaporation is saturation of the cotton-wool plug with paraffin wax.

1. *Sugar reactions.*

As a basis for these reactions broth and peptone-water prove quite satisfactory. An extensive trial has been made of an "ovomucin" basis prepared according to Winter's suggestion.[1] Bleached acid fuchsin has been used as the indicator. This medium is cheap and easy to make. The formula is as follows:—

Take 45 g. of dried commercial white of egg, make up to a litre with tap water and dissolve in the cold. Steam at 100° C. to precipitate the albumin and globulin and filter while hot. The filtrate should be almost clear. Add 0·5 per cent. sodium chloride, 0·5 per cent. of the desired sugar, and a sufficiency of the acid fuchsin indicator. Bring the whole to boiling point and run in N/10 HCl till the fluid is still just pink while hot but becomes colourless on cooling. Subsequent steaming, after tubing, diminishes the acidity somewhat.

Media thus prepared should be transparent and colourless, readily becoming crimson on development of acid. The ovomucin basis has proved quite as good as the ordinary peptone basis; indeed, it appears more delicate as certain very slight reactions may be appreciable in it which are usually missed with peptone—e.g., the power of some strains of Shiga's bacillus to give slight acidity with maltose and even lactose, as first stated by Winter.

The fermentable substances used in the present research have been six in number—viz., glucose, lactose, maltose, saccharose, mannite, and dulcite. The essential ones in dysentery work are four only—viz., glucose, lactose, mannite, and dulcite. Glucose refers the organism provisionally to the dysentery group, by giving acidity without gas; lactose is needful for excluding late lactose fermenters, for which purpose the tubes must be kept under observation for three weeks or more, though an earlier clue may be afforded by persistent and progressive acidification of litmus milk. Mannite is necessary to distinguish Shiga from the Flexner group, while dulcite is useful, since a positive result suggests the *alkalescens* group; genuine dysentery bacilli do not appear to ferment dulcite. The maltose and saccharose tests are of little real service; the subgrouping of the Flexner races by sugar reactions seems beset with fallacies.

2. *Indol formation.*

Of the various methods tried for this test that advocated by Glynn—viz., extraction with ether—seems much the best. A 48-hours culture in broth or peptone water is shaken with 1 c.cm. of ether. Some of the ether is then pipetted off on to a few drops of water in an ordinary agglutination tube, after which a few drops of Ehrlich's paradimethyl-reagent are run down the side of the tube and settle between the ether and the water. Here the rosy violet colour appears at once, or at most in a couple of minutes. No persulphate is needed. The virtue of this method of testing is that no subsidiary colour reactions occur, and there is never the smallest doubt as to the result of the test. Alternatively the paradimethyl-reagent may be run into the original broth tube after shaking with ether; this is quicker, but not quite so clean and decisive.

The indol test serves only one really useful purpose in dysentery work—namely, in distinguishing Shiga from *B. ambiguus*. Shiga never forms indol; *B. ambiguus* and *alkalescens* form it freely; different strains of Flexner-Y are variable in this respect, as are the lactose fermenters.

3. *Alkali formation* in relation to initial acidity.

All members of the dysentery group form alkali by the cleavage of protein, though this is masked in presence of a fermentable sugar. The true dysentery bacilli form it somewhat less vigorously than most other members of the group. *B. ambiguus* resembles the dysentery bacilli in this respect, but *B. alkalescens* and *B. dispar* form alkali with more rapidity.

The ordinary test revealing alkali formation is culture in litmus milk, which in the case of *B. alkalescens* becomes dark slaty-blue in the course of a week or two. In the case of *B. dispar* the reaction is masked by lactose fermentation. *B. ambiguus* and the true dysentery bacilli give slight initial acidity, followed by slight alkalinity later, but the changes in colour are sluggish and often difficult to follow; in the case of most of the dysentery strains examined the litmus milk at the end of two or three weeks was much the same colour as at the beginning.

[1] Zeitschr. f. Hyg., lxx., 283.

An attempt was made to devise a medium which would offer a more sensitive registration of alkalinity.

This proved easy, for all that is needed is a sugar-free medium and a suitable indicator. The latter was found in phenol-sulphone-phthalein (phenol red) which gives a striking series of colour changes about the point of absolute neutrality. At 6·0 on the P_H scale it gives a slightly greenish-yellow, which passes to full yellow, orange, and apricot, the last-named indicating the point of absolute neutrality. The colour then becomes yellowish-pink, cherry-red, bluish-pink, and, finally, a full crimson at about 9·0 P_H. The precise degree of alkali formation within these limits can thus be read off easily. Both peptone and ovomucin have been tried as a basis, but the latter proved the better because it does not become so turbid as peptone water and the colour readings are clearer.

The medium is made thus: Prepare ovomucin as above described with the addition of 0·5 per cent. NaCl. To each 100 c.cm. add 4·6 c.cm. N/10 HCl, steam, and filter. Add 1 c.cm. of a 0·25 per cent. suspension of phenol red in water to each 100 c.cm. of medium. Tube and steam for 30 minutes at 100° C. on each of two successive days. The reaction should now be + 2·5 on Eyre's scale and the colour yellow with a very faint greenish tinge. (The steamings reduce the acidity from + 5 to + 2·5.) It is easy to tell whether the reaction is too alkaline, by inoculating a tube with Shiga's bacillus as a test. This should show no growth in less than a week.

A hundred or more strains have been submitted to this test, which has proved useful in bringing out additional differences amongst the members of the dysentery groups, though not quite in the way that was expected.

The differences in the rate of alkali formation, when it has once begun, were not so great as was anticipated, but great variations were found in the "incubation period" which elapsed before there was any visible sign of growth or alkali formation, these two going hand in hand. The optimum reaction for growth is about + 1·5 Eyre, and if the initial acidity is no greater than this all species begin to form alkali in one or two days and have reached a full carmine in a week or so. But if the initial acidity is put back to + 2·5 Eyre the more delicate pathogenic organisms are placed at a disadvantage. The test thus becomes not merely one for alkali formation but largely one for ability to grow in ovomucin at this point of acidity.

It is probable that further experience may improve the method. Meanwhile it has afforded the following results, the figures given being the averages of many strains tested, because the variations of individual strains are sometimes considerable.

B. Shiga has never shown growth or alkalescence before the seventh day, and the average time of commencing change is over ten days. Some strains never grow.

B. Flexner exceptionally begins to grow in two or three days, but the average is six to seven days. One or two strains have shown no growth in four weeks, and one only began on the forty-third day.

B. ambiguus begins to grow on an average in five days.

B. alkalescens gives vigorous alkalinity in two, or at most three, days.

B. dispar gives vigorous alkalinity in two days.

When once growth and alkalinity have commenced the usual time occupied in running through the gamut of tints offered by the indicator is from eight to ten days, but some strains of *B. alkalescens* and *dispar* can accomplish the task in five days.

The chief point of importance brought out by these observations is the greater vigour of growth, and consequently of alkali formation, shown by the two last-named species in comparison with the genuine dysentery bacilli. It must be admitted that the test is one more fitted for research work than for routine laboratory use, for the differences shown by the different species are best brought out when a large number of strains are simultaneously tested on the same batch of medium.

The Acid Agglutination Test.

The flocculation and precipitation of bacterial emulsions in presence of certain H-ion concentrations is a phenomenon which has long been known.

Different bacterial species are agglutinated at different H-ion concentrations, and Michaelis has shown how this fact may be used for differentiating *Para. A* and *B* from *B. typhosus*. In a recent paper[2] he claims that in presence of a trace of protein the dysentery bacilli may be readily distinguished from their allies. The claim has been tested upon a large number of strains of Shiga and Flexner-Y on the one hand, and *B. ambiguus*, *alkalescens*, *dispar*, and other miscellaneous organisms on the other, with the result that Michaelis's statements seem fully confirmed. The test is so simple and rapid, and furnishes such useful information, that it deserves to be widely known and used. The method is as follows:—

Six stock solutions are made up with normal soda and normal acetic acid in the following proportions—

	Normal NaOH.	Normal acetic acid.	Distilled water.
No. 1	5 c.cm.	7·5 c.cm.	87·5 c.cm.
No. 2	5 ,, ...	10·0 ,, ...	85·0 ,,
No. 3	5 ,, ...	15·0 ,, ...	80·0 ,,
No. 4	5 ,, ...	25·0 ,, ...	70·0 ,,
No. 5	5 ,, ...	45·0 ,, ...	50·0 ,,
No. 6	5 ,, ...	85·0 ,, ...	10·0 ,,

affording a constant strength of sodium acetate with an excess of acetic acid ranging from 1·40 N in No. 1 to 4·5 N in No. 6. For the test a 24-hour agar culture of the bacillus is emulsified in 20 c.cm. of distilled water; broth cultures cannot be used on account of the sodium chloride present. Three parts of emulsion are measured into each of six test-tubes or agglutination tubes, with the addition to each tube of

[2] Deutsch. med. Wochenschr., 1917, xliii., 1506.

a little protein (for a small test-tube holding 1 or 2 c.cm. a drop of a tenfold dilution of normal human serum suffices). One part of each stock acid solution is now added to the six tubes respectively and well mixed. The tubes are incubated for two hours at 37° C. and the results read with the naked eye, preferably after standing at laboratory temperature for half an hour.

True dysentery bacilli show no macroscopic agglutination.

Nine strains of Shiga and 29 strains of Flexner-Y have been subjected to the test. No Shiga was agglutinated; in the case of one or two strains one could see a slightly granular appearance with a lens, though not with the unassisted eye. One Flexner-Y, when first tested, showed marked agglutination; it was plated out and found to be impure, so the test was repeated with cultures from two isolated colonies. These still showed feeble agglutination, just perceptible to the naked eye. Another strain showed weak agglutination when first tested, but 6 colonies tested after replating showed no macroscopic agglutination. With these exceptions all Flexner-Y's remained unagglutinated.

All other members of the dysentery group (*B. ambiguus*, *B. alkalescens*, *B. dispar*, and a few others unplaced) were without exception vigorously agglutinated at some point in the six tubes, usually in the last 5, sometimes in all 6.

Altogether 42 strains were tested—viz., 13 *B. ambiguus*, 11 *B. alkalescens*, 11 *B. dispar*, and 7 miscellaneous. One strain of *alkalescens* was at first negative, but on repeating the test after a few passages through broth it agglutinated well, while a second strain of the same organism, isolated from the same case a little later, agglutinated vigorously from the first.

On one occasion 10 proved strains of dysentery were mixed with 11 known not to be true dysentery, though they had in practice been confounded with them. They were numbered consecutively and handed to me by Captain Inman. I put them through the acid agglutination test in ignorance of their individual nature. The true dysenteries were picked out with no exception.

Judging from this experience it would seem that the test, though an empirical one, is likely to be of much service.

It enables the bacteriologist who is searching for dysentery bacilli forthwith to discard any culture which agglutinates within the H-ion concentrations of Michaelis's six solutions. Failure to agglutinate, however, does not alone prove an organism to be true dysentery; the ordinary cultural and serological tests should be applied in confirmation. A strain of *B. coli* from a "dysentery" case was found not only to resemble true dysentery in the absence of acid agglutination, but clumped to full titre with a Y-serum, and this after it had been in cultivation for a year. This case is of interest as suggesting an antagonism between acid agglutination and agglutination with anti-dysenteric sera. Major McNee isolated a number of strains of a form of *B. coli* from suspected dysentery cases, all of which agglutinated well with Flexner-Y serum. After being kept for a year they still clumped with this serum though to lower titre. He kindly sent me 12 cultures of the organism. All were tested against Flexner-Y sera by Captain Inman, and only one was now found to agglutinate to titre. This was the only one which proved negative to acid agglutination; all the rest clumped vigorously. It should be added that five strains of supposed dysentery, not included in the above figures, although they gave the cultural reactions of Flexner, proved totally inagglutinable with stock specific sera, but showed vigorous acid agglutination. These strains are still under investigation.

Agglutination with Specific Sera.

For reasons already given it has not been possible to make the number of monovalent sera required for an adequate serological study of the strains under investigation. All strains, however, have been tested against the various stock sera available.

The method employed has been the macroscopic one at a temperature of 55° C., readings being taken at the end of four to five hours. Sometimes young living broth cultures were used, but more often formalinised broth cultures which had been kept in the ice chamber.

Captain Inman, whose experience in dysentery agglutination is second to none, has been so good as to undertake this part of the work in the case of a large number of strains. He has used the strict Dreyer technique, but I myself have departed from it to the extent of employing a graduated pipette instead of the drop method in making the dilutions and a hot-air oven in place of a water-bath. In cases of difficult agglutinability the organism was passed through a series of daily broth cultures, starting from a single colony, and then formalinised and put on ice for a few days; one or two strains which at first agglutinated badly became readily agglutinable when thus treated.

Although the detailed serological study of the dysentery group has been unavoidably deferred, certain general conclusions appear to emerge from this preliminary work and may shortly be stated as follows:—

(1) Shiga's bacillus is readily agglutinated to end-titre by any of the stock Shiga sera. No instance of an inagglutinable Shiga has been met with in the course of this work.

(2) *B. ambiguus* is not agglutinated by Shiga sera, even in low dilution.

(3) Flexner-Y bacilli are usually agglutinated to end-titre, or its neighbourhood, by one or another of the stock sera on the market, but different strains may respond to different sera.

Certain sera—e.g., the Oxford-Y—are sharply specific as regards different races, and the same seems true of the R A M.C. sera prepared at Millbank. Others, and especially the polyvalent ones, are wider in their embrace: such are the Y serum supplied by Burroughs and Wellcome, and above all the Lister Institute Y serum, which brings down Flexners better than Y's.

Failure to agglutinate with any one serum thus does not prove that a bacillus is not a Flexner-Y, but when a bacillus does not agglutinate, or agglutinates only to 1/4 titre, with a series of authentic sera, there is a primâ-facie presumption against its dysenteric nature, though all available tests must be employed in arriving at a decision. Certain strains giving the cultural reactions of Flexner undoubtedly fail to agglutinate with any stock serum; two or three such have been met with in the course of this work, and are apparently separable from true dysenteries by the acid agglutination test also. They are at present under further investigation.

There seems no necessary relation between agglutination by specific Y or Flexner sera and the fermentation of maltose; the classification by sugar reactions is not parallel with that by racially specific sera. Finally, agglutination even to end-titre with a Flexner-Y serum does not necessarily prove an organism to have any relation with dysentery. Certain strains of *B. coli* may behave thus.

(4) *B. alkalescens* fails to agglutinate with Flexner-Y sera within the usual time limit of 4 to 5 hours.

If the tubes are left at 55° C. for 24 hours, some agglutination often occurs up to 1 in 500 or even 1 in 1000, but always short of end-titre. This agglutination seems of a different order from that given by the true dysentery bacilli. In a few absorption tests it was found that *B. alkalescens* failed to absorb agglutinins for Flexner-Y, though completely removing its own agglutinin fraction from Flexner-Y serum. This bacillus seems a poor agglutinator and has very feeble antigenic powers, contrasting in this with Flexner-Y.

(5) *B. dispar* is in much the same case.

Flexner-Y sera will not agglutinate it in 4 or 5 hours, and after 24 hours at 55° C. only in low dilutions. Like *B. alkalescens* it is a poor agglutinator. A serum was prepared which clumped the homologous strain quite well up to 1 in 12,000 or more, and in characteristic fashion, with an inhibition zone in the lower dilutions, but this agglutination was manifested only after 24 hours at 55° C., scarcely at all in 4 hours.

The serological relations of *B. alkalescens* and *B. dispar* with the Flexner-Y bacillus seem thus remote, though there is a suggestion of some small element in common.

Pathogenicity.

Inasmuch as the pathogenic powers of the true dysentery bacilli are well established, the limited number of rabbits available for experiment were all employed in testing other members of the dysentery group of bacilli. The following ten observations were made.

1. Pathogenicity of *B. ambiguus*.

A living suspension in saline of about one quarter of a 24-hours agar slope was injected intravenously into a rabbit of 1650 g. The animal became ill in an hour or two and was found dead next morning. No visible lesions could be found in the body; the intestines showed no sign of congestion. The heart's blood yielded *B. ambiguus* on culture.

Two further animals were injected intravenously a few days later with a similar living agar suspension from the same slope culture as the preceding. The doses were much smaller, but still large; one animal received approximately 800 million and the other 1200 million bacilli. Both animals remained quite unaffected.

While, therefore, this bacillus, injected intravenously in overwhelming dose can kill a rabbit, no suggestion of intestinal lesion was produced. The large living doses borne without ill-result in the remaining two cases make it clear that the pathogenicity of the organism is at best of a low order and very different from that of Shiga's bacillus.

2. Pathogenicity of *B. alkalescens*.

A formalinised broth culture, later proved not to have been entirely killed, was injected intravenously into a rabbit of 2030 g. in a dose of 1 c.cm. Neither this dose nor succeeding larger doses ever produced the smallest sign of illness; the animal gained weight.

A similar treatment of a rabbit with dead formalinised broth cultures of another strain, presumably a variety of *B. alkalescens*, but differing from the type in its sugar reactions, also produced no sign of illness.

A third strain of typical *B. alkalescens*, isolated a day or two previously from the bloody stool of a case of mucous colitis (probably not a genuine case of dysentery), was injected intravenously into another rabbit. The dose was 1 c.cm. of a living broth culture three days old. The animal was unaffected and gained weight.

These experiments, few as they are, suggest that *B. alkalescens* is devoid of pathogenic power and separate it sharply from the Flexner-Y group.

3. Pathogenicity of *B. dispar*.

Two strains were tested. The first was a very late lactose fermenter, but otherwise gave the cultural reactions of a Flexner, though agglutinating strongly with Michaelis's acid test. One c.cm. of a formalinised broth culture, injected intravenously into a rabbit, killed the animal in less than 24 hours. The small intestine was congested and the contents of the large intestine fluid. The heart's blood was sterile on culture.

A second rabbit was injected with the same formalinised broth culture in the attempt to procure an antiserum. Doses of 1/20 c.cm., gradually increasing to ½ c.cm., were given intravenously and produced no ill-effect. One c.cm. was then given subcutaneously, when the animal began to lose weight and finally showed paresis of the hind limbs, whereupon it was killed. The titre of the serum on the homologous bacillus was practically nil.

A further strain of *B. dispar* was tested on two other rabbits. The first, an animal of 2·60 g., received an intravenous dose of 1 c.cm. of a formalinised broth culture which had not been completely killed. No further dose was given. The animal wasted from the first, and presently became palsied in the hind limbs and then in the fore limbs. It died on the 13th day, the bacillus being recovered from the heart's blood. The colon was thin-walled and injected and presented doubtful appearances of ulceration. There were no hæmorrhages.

The second rabbit was treated with small weekly doses of a dead formalinised broth culture, ranging from 1/10–1/5 c.cm. intravenously, and finally with doses of 1 and 2 c.cm. subcutaneously. It did not waste much, and when killed, after six weeks, yielded a high titre serum.

These experiments show that some, at least, of the late lactose-fermenting members of the dysentery group possess considerable pathogenic power for the rabbit. The relation to human dysentery remains unproven for the present.

Description of the Three Species or Groups Allied to the Dysentery Bacilli.

B. ambiguus, *B. alkalescens*, and *B. dispar* have certain characters in common with other members of the dysentery group.

Their size and shape are the same. Measured in the wet living condition, in 24-hour broth cultures, the diameter is about 0·9 μ and the length 1 to 3 μ. In stained dried films the size is less, the diameter being about 0·6 μ. *B. alkalescens* is rather stouter than the other two, being 1 μ or a little more in diameter when living. They are all non-motile and presumably non-flagellate. There is nothing to suggest that they form spores. All are negative to Gram's stain and none of them liquefy gelatin. The special characters which differentiate them from other members of the dysentery group are these:—

The special characters of *B. ambiguus* are:—

Produces acid without gas in glucose media, usually in 24 hours, occasionally not till the second day (1 out of 13 strains). Some observers speak of traces of gas being formed; this has not been observed here. The disaccharides are never fermented, with the exception of an occasional late acid formation in saccharose (4–8 days) seen in 3 out of 13 strains. Mannite and dulcite are not fermented. Indol is formed readily in peptone water or broth; two strains, otherwise typical, failed to form it out of 13 examined. In litmus milk there is slight initial acidity, the colour returning later to the starting point or becoming slightly alkaline. Alkali formation in peptone is not very early in onset. Lieutenant-Colonel C. J. Martin states that broth cultures have a stale fishy smell. The organism agglutinates strongly with Michaelis's acid agglutination test; no exception has been found to this. It is inagglutinable with Shiga sera or Y serum; no specific antiserum has been made in this laboratory. No record is to hand of any case in which the organism has been agglutinated by the blood of the patient from whom it had been isolated. It is sometimes noted as abundant in the stools of "blood and mucus" cases, more often in small numbers. Lieutenant-Colonel Martin notes its presence in stools which also contained Flexner-Y bacilli in abundance. The bacillus appears non-pathogenic to the rabbit unless injected in overwhelming dose.

The special characters of *B. alkalescens* are:—

Produces acid without gas in glucose and maltose and in mannite and dulcite media. Lactose and saccharose are not fermented. The reactions are manifest at latest on the second day. A few strains have been met with, possibly referable to this species, in which the dulcite reaction was absent and some in which saccharose was fermented at the end of seven days. Indol has been formed in all the strains examined. Litmus milk gives a characteristic reaction; after a week or ten days it becomes dark blue, and gradually passes into a slaty tint resembling that seen with *B. alkaligenes fæcalis*. Alkali formation occurs early and runs its course quickly in an ovomucin or peptone medium in the absence of sugars. *B. alkalescens* clumps strongly with Michaelis's acid agglutination test. The organism is not agglutinated by specific Shiga or Flexner-Y sera within the ordinary time limit of 4–5 hours at 55° C. Only when the tubes are left at this temperature for 20–24 hours does agglutination occur with some strains, and then well below the titre of the serum. It seems at best a bad agglutinator and an organism of feeble antigenic power. No case has been met with in which it has been agglutinated by the serum of the patient from whom it has been isolated; in one instance in which it was obtained in almost pure culture from the stools this test was twice negative, even in a serum dilution of 1 in 10, although the patient had been ill for several months. It appears quite non-pathogenic for the rabbit.

The special characters of *B. dispar* are:—

This name is tentatively suggested for the lactose-fermenting members of the dysentery group without prejudice as to the number of types or species which may be thus included. Three strains fermented lactose in 24 hours, others only after 8–10 days, and one not until the 24th day. Of 11 strains examined all fermented glucose, maltose, and mannite readily, six fermented saccharose, and two fermented dulcite, in no case with gas production. Indol was formed by four strains only. Litmus milk is acidified and ultimately clotted, but the clotting may not occur for a fortnight or more. In media containing no sugars alkali formation is as early and vigorous as in the case of *B. alkalescens*. Agglutination has always been vigorous with Michaelis's test. In its relations with specific Flexner-Y sera it also resembles *B. alkalescens*. There is no agglutination within the ordinary time limit, but in 20–24 hours at 55° C. some clumping may occur in lower dilutions. Even with a serum prepared against itself, the poor agglutinability of one strain was manifest in the same way, 24 hours at 55° C. being required. There is no record of the agglutination of these lactose-fermenting bacilli by the serum of the case from which they have been obtained. Some types at least are pathogenic for the rabbit, as already related. The study of the lactose-fermenting members of the dysentery group appears to be worth pursuing in fuller detail in relation to human disease.

It will be convenient to put the chief facts just stated in a tabular form, contrasted with the corresponding data for the true dysentery bacilli:—

	Sugar reactions				Indol formation.	Alkali formation.	Michaelis's acid agglutination.	Agglutination with specific dysenteric sera.	Pathogenicity for rabbit.
	Lact.	Gluc.	Malt.	Dulc.					
B. Shiga... ...	–	+	–	–	–	Slow.	–	To titre.*	Very high.
B. ambiguus...	–	+	–	–	+	,,	+	Negative.*	Prac. neg.
B. Flexner-Y ..	–	+	+	–	±	Mod.	–	To titre.†	Marked.
B. alkalescens..	–	+	+	+	+	Vig.	+	Negative.†	Negative
B. dispar ...	+	+	+	–	±	,,	+	,,†	Marked.

* With Shiga serum. † With one or another Flexner-Y serum.
Mod., Moderate. Vig., Vigorous. Prac. neg., Practically negative.

This table shows the common reactions of the types concerned; the occasional exceptions which have been noted have been already mentioned.

Conclusions.

Although it is plain that this short study of the dysentery group is very incomplete, it has been thought advisable to bring forward the conclusions which seem to emerge at this stage, not only for the assistance but much more for the criticism of other workers at the subject. Should the conclusions be confirmed by others a distinct step in advance will have been made, since it appears that a large proportion of the forms which have masqueraded as atypical dysentery bacilli can readily be distinguished by appropriate tests.

The species described as *B. ambiguus* and *B. alkalescens* seem fairly well defined and can be rejected as having no connexion with dysentery. With regard to the lactose-fermenting forms which I have grouped under the name *B. dispar*—more for the sake of a convenient general term than because I believe them to be a single entity—much more work is necessary. There is a general belief that the lactose fermenters can be excluded in dysentery work, and this is very likely correct; at least, they cannot be returned as dysentery bacilli.

Even when all these simulators of *B. dysenteriæ* are rejected there will doubtless remain a certain proportion of aberrant strains which cannot be thus accounted for, and some of these may be really atypical members of the Flexner-Y group. Judging, however, from this series of 100 strains, the majority of which were sent as presenting abnormal features, such a residue would be very small.

The acid agglutination test will, I think, be found of great practical value in routine laboratory work with dysentery bacilli. It seems hardly too much to say that it will do what no one specific serum can do, and that the margin of error is perhaps less than when even a number of specific sera are used.

One or two points remain for comment. Before returning a dysentery bacillus as inagglutinable it is always desirable to pick out a colony, pass it through a few daily sub-cultures in broth, and then formalinise the last broth culture and keep it for a few days in the cold. Some strains, which at first agglutinate poorly, come down freely after such treatment. Again, in returning a bacillus as agglutinable it is desirable to state whether it agglutinates to the full titre of the serum or only to half or a quarter titre. In order to do this it is necessary for the worker to have tested for himself the titres of the sera which he uses by the actual method which he is accustomed to employ. A given serum will differ widely in the results it yields with varying techniques and the titre stated on the bottle may give an erroneous impression. The method employed should be mentioned in the returns.

Finally, it is greatly to be desired, in the case of all doubtfully pathogenic forms isolated from cases of suspected dysentery, that careful observations should be made on the agglutinating power of the patient's serum upon the organism isolated, as this is an important link in the chain of evidence.

THE ETIOLOGY AND TREATMENT OF "TRENCH FOOT."

(A Report to the Medical Research Committee.)

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THE usual classification of the disease known as "trench foot" is based entirely upon a clinical picture. From this clinical picture also the attempt is made to deduce the etiology, and the nature of the most severe type of case is such as to seem to warrant the conclusion that the disease starts from the outside of the foot. Therefore the most common form of treatment is a purely local one.

We propose in the following to advance evidence which shows that the disease in all its forms starts from the interior, and that the infections which often mark the course of the disease are but the natural secondary manifestations of the reaction of devitalised tissues to infective agents; that, therefore, the treatment of the condition should be directed to the skin only in so far as these secondary infections have resulted in surgical conditions.

Evidence of Vaso-motor Disturbance in "Trench Foot."

There is a disease of civil practice which bears a certain resemblance to "trench foot." This disease is, or these diseases are, known as "Raynaud's disease," "intermittent claudication," "erythromelalgia," "thrombo-angitis obliterans," perhaps best grouped under the generic name of the angio-tropho-neuroses. Nothing is known of the etiology, much has been written, no treatment is accepted.

The suggestion which has often been made in regard to this group of diseases, that the condition is due to a vaso-motor spasm, led us to the attempt to discover if there is any clinical evidence of vaso-motor disturbance in "trench foot" beyond the ocular evidence of whitening of the skin, or hyperæmia, œdema, and so forth; the very suggestive observations given below in detail were the result of this attempt. There is in "trench foot" a marked increase of blood pressure as determined by the usual clinical methods as compared with that in the arm, the patient being in the horizontal position; that is, there is a marked increase of the resistance in the leg to the obliteration of the pulse by the pressure of the cuff, as compared with this resistance in the arm. It is this increased resistance which we mean by the term "increased blood pressure" in this paper.

In normal individuals lying horizontally blood pressure in the arm and leg is practically equal. On assuming the standing posture, blood pressure in the arteries of the lower extremity rises in exact proportion to the weight of the hydrostatic column of blood. This increase is approximately 2 mm. for each inch.

In many cases of aortic insufficiency, especially in those in whom compensation is good, the leg pressure definitely exceeds the arm pressure, even in recumbency. So far as we are aware, this is the only condition heretofore known in which such a pressure difference is commonly, if not constantly, present.

There is not complete agreement among physiologists, as to the exact mechanism by which this discrepancy between readings from the leg and the arm is produced; but the rival theories agree in attributing it to an increased tone, or an increased rigidity, of the wall of the artery itself. How far into the periphery such a condition might extend is perhaps indicated in cases of "trench foot" by the local disturbance in the foot itself, and leads us to suspect that the process extends to, and involves the arterioles.

Now whether this arterial spasm or increased resistance of the artery to an external force be due to an excess of vaso-constrictor influence, or whether it be due to a loss of vaso-dilator influence, the result being the same, it would seem that an attempt to increase the proportion in the circulation of substances tending to reduce blood pressure would be a reasonable therapeutic indication.

The opposite picture to peripheral vaso-constriction is seen in hyperthyroidism, as evidenced by the sweats, the sudden diarrhœa, the flushings, perhaps also the tachycardia; therefore we have resorted to the administration of potassium iodide, which is known to stimulate the thyroid; thyroid extract is the first thought, but we had none at hand.

"Trench Foot" attributed to Spasmodic Contraction of Arterioles.

It may be asked why, when the œdema and the diapedesis of red cells comes from the capillary walls, we blame the arterioles rather than the capillaries. The reason is our finding of increased arterial resistance and the spasmodic nature of the attacks of pain.

Physiologists are not yet agreed as to the point in the vascular system where the blood-stream encounters the greatest resistance, but the majority of opinion seems to be that it must be in the arterioles because the blood passing from the arterioles enters an area in which the total cross section is enormously increased; further, the arteriole is the only peripheral vascular structure which possesses a mechanism intrinsically capable of change. At least no such mechanism has been demonstrated in the capillaries nor in the small veins. Any change in the pressure in the arteriole would be expressed by changes in the capillary blood, for as long as there is any circulation at all there must be a plus pressure in the arterioles; even after death there must be a residuum of plus pressure in the arterial side, for the arteries are empty in the cadaver.

The circulation of blood in the veins of the foot is dependent upon several factors—the driving pressure of the heart-beat, the consequent filling of the system, and the resultant *vis a tergo;* the action of the skeletal muscles, perhaps the most important factor in the peripheral circulation of lymph and venous blood, a factor too completely forgotten in various surgical conditions. This factor is of such importance that it is said that mere standing still will impede and may suspend the flow of blood through the foot; the value of rubbing the feet, of moving about while in the trenches, is based upon this consideration of physiology.

Now the standing still in the cold and wet may be the causal factor in "trench foot," as it must be the exciting factor, in which event, however, all men should be susceptible. Since all men under the same conditions do not fall victims, and since in the men who are affected these facts of "clinical blood pressure" which we herewith demonstrate are to be found, we feel compelled to the conclusion that "trench foot" is a disease incited by the effect of cold and inaction upon a foot whose vaso-motor system is physiologically impaired, and therefore also more rarely we encounter a "trench hand" and "trench knees."

Our explanation of "trench foot," based upon our reasoning and our findings, is that there is a spasmodic contraction of the arterioles of the foot.

The first result of this arteriole spasm is ischæmia with numbness, tingling, burning pain; the second result is a disturbance of capillary circulation, perhaps due to back pressure from the veins, perhaps due to the loss of rhythmicity of the driving force, perhaps to mere stagnation, with swelling of the foot from œdema and diapedesis of red cells. This results in devitalisation of the skin and the favouring of infectious processes, and may extend to actual gangrene.

Results of Investigation.

It is evident that much work is needed to clarify the problem. We venture this preliminary report because of the importance of the facts shown, and because we are convinced that potassium iodide is a most important addition to the treatment of "trench foot," for the prompt alleviation of pain, if for no other reason.

Our readings were made with two different types of aneroid sphygmotonometer. They were made with the patient recumbent and relaxed, first upon the leg and then upon the arm. The usual clinical precautions were taken to eliminate avoidable errors. The auscultatory method was used, the systolic pressure being read at the first regular appearance of sound, and the fifth phase being chosen as the diastolic criterion. The fifth phase rather than the fourth was chosen owing to the difficulty of identifying the onset of

RECORD OF CASES.

Blood pressure: (A) Systolic; (B) Diastolic.

No.	Age.	Date in 1917.	Remarks.	A Leg.	A Arm.	B Leg.	B Arm.
1	20	—	Severe.	158	132	80	62
2	27	—	Moderate.	145	126	90	65
3	35	—	Well.	142	138	70	70
4	26	—	Sl. numb.	125	123	60	65
5	27	—	Well.	130	130	65	70
6	21	—	Moderate.	132	105	80	50
7	26	—	Very sev.	160	120	90	85
8	23	—	Severe.	165	120	90	85
*9	23	—	,,	150	120	85	70
†10	24	—	Mild.	130	115	80	75
11	19	—	,,	130	125	80	60
12	23	—	Severe.	152	120	90	80
13	31	—	Mod. sev.	122	105	85	55
14	19	—	Slight.	120	120	70	60
15	26	—	Severe.	148	130	80	80
16	29	—	Mod. sev.	142	115	80	60
17	27	—	,,	140	110	80	60
18	22	—	,,	120	110	70	60
19	26	—	Well.	110	110	60	60
20	31	—	Mod. sev.	140	105	80	60
21	22	—	Mild.	110	100	60	70
22	27	—	,,	130	120	70	55
23	23	—	Mod. sev.	130	125	60	58
24	20	—	Mild.	130	120	80	70
25	24	—	,,	138	128	80	70
26	24	—	Well.	120	120	65	65
27	24	—	,,	130	126	80	70
28	23	—	,,	130	130	70	70
29	25	—	Mod. sev.	130	105	80	70
30	25	7/11	Mild.	140	138	78	75
		9/11	Better.	135	130	80	75
31	20	7/11	Mild.	132	130	80	80
		9/11	Worse.	138	118	90	70
		14/11	Better.	120	108	75	68
32	20	7/11	Mod. sev.	130	115	80	70
		14/11	Same.	135	115	85	80
		16/11	KI 24 hrs.; no pain.	125	120	70	65
33	21	7/11	Mod. sev.	120	112	84	60
		9/11	Worse.	130	120	85	65
		14/11	KI 24 hrs.; improved.	108	110	80	60
34	26	7/11	Severe.	152	120	90	80
		9/11	Improved.	143	120	70	65
		10/11	Same.	143	128	90	75
35	23	7/11	Moderate.	130	115	75	60
		9/11	Gr. imp.	122	108	75	75
		14/11	,,	110	110	60	70
36	26	7/11	Moderate.	122	108	60	60
		14/11	Better.	125	110	70	70
		23/11	Well; KI four days.	130	130	80	80
37	25	18/11	Severe; KI	130	98	80	50
		20/11	Better; TB	115	115	70	30
38	27	18/11	Mild; KI.	110	100	80	60
		20/11	Well.	110	112	80	80
39	30	18/11	Mod. sev.; KI.	140	130	80	70
		19/11	Pain less.	130	128	95	80
40	25	18/11	Mod. sev.; KI.	125	100	65	70
		20/11	Better.	118	98	60	50
41	26	19/11	Mod. sev.	130	100	90	60
		23/11	Better; KI 24 hrs.	128	110	80	65
42	23	20/11	Mod. sev.; KI.	140	105	80	60
		30/11	Gr. imp.	125	120	80	80
43	25	18/11	Mod. sev.; KI.	160	130	100	75
		19/11	Less pain.	150	130	100	70
		20/11	Same.	150	128	100	70
		27/11	Worse (*a*).	157	140	90	80
		2/12	Better.	135	130	80	70
44	26	18/11	Mild; KI.	120	115	80	65
		21/11	Well.	100	100	50	50
		24/11	Cough (*b*).	110	110	60	60
		27/11	Fever; P.U.O. (*c*).	125	118	80	80
		3/12	Worse; Eng	125	116	90	80
45	29	7/11	Mild.	138	118	80	62
		9/11	Pain (*d*).	138	125	80	60
		10/11	,, (*e*).	155	128	95	65
		16/11	KI 24 h. (*f*)	180	180	90	80
46	26	7/11	Mod. sev.	140	128	90	80
		9/11	Pain sev.	151	138	85	85
		10/11	Ng. gr. $\frac{1}{100}$; same.	150	128	85	85
		11/11	Ng. gr. 1/50	150	118	90	75
		14/11	Better.	140	120	90	80
		16/11	KI 24 hrs.	140	130	80	80
		19/11	Up; n.p.	132	132	60	70
47	25	7/11	Mod. ev.	135	120	65	60
		9/11	Better.	100	90	80	50
		14/11	Same.	110	100	80	50
		16/11	KI 24 hrs.; no pain.	125	122	65	60
		19/11	N.p.; up.	110	110	65	60
		23/11	Well; up.	110	110	60	60
48	22	7/11	Severe.	150	125	80	65
		9/11	Worse (*g*).	160	125	90	80
		14/11	Much better.	138	130	60	70
		16/11	KI 24 hrs; no pain.	130	130	80	80
		19/11	Sl. pain (*h*)	140	140	80	80
		23/11	Stiffness in ankle.	120	119	80	70
49	20	7/11	Severe.	150	120	80	60
		9/11	Imp.; KI.	140	120	90	60
		14/11	Better.	120	110	80	70
		16/11	,,	123	122	70	70
		19/11	N.p.; up.	130	130	80	70
50	23	18/11	Sev.; KI.	140	138	80	70
		20/11	Better.	140	128	70	60
		24/11	Inc. gang.; worse; KI.	170	138	100	70
		1/12	Better.	158	120	100	70
		2/12	,, (*i*).	170	130	110	80
		3/12	Better; up.	150	130	110	80
		10/12	Gang. (*j*).	150	135	90	80
51	20	18/11	Sev.; KI.	100	80	50	40
		24/11	Worse.	160	120	80	60
		27/11	Better.	145	120	100	69
		1/12	KI st.; better.	138	110	90	60
		3/12	T.e. 24 hs.; no pain.	140	117	100	65
		10/12	N.p.; walk	120	120	70	70
		11/12	Wa.; shoes.	120	120	70	80
52	19	18/11	Sev.; KI.	130	150	50	70
		19/11	Pain better	145	150	90	70
		20/11	Better.	152	150	100	80
		23/11	,,	150	138	100	80
		24/11	,,	148	130	100	70
		27/11	Imp.; t.e.	150	130	95	65
		1/12	Better.	135	120	90	60
		2/12	Improving	128	130	80	50
		3/12	Sleep (*k*).	125	127	90	60
53	26	20/11	Mod. sev.; KI.	140	110	85	65
		26/11	Same.	130	100	70	60
		1/12	Less pain; better.	138	100	80	50
		2/12	Better; t.e. 2 dys.	128	110	80	70
		3/12	Better.	110	98	80	60
		7/12	Up; walk.	110	105	75	70

* Case 9.—? Trench foot. † Case 10.—? Trench foot and P.U.O.

Controls.

Disease: Case 1. Myalgia. 2. G.S.W. spinal cord; paralysis. 3. Arthritis. 4. Neurasthenia; shell shock. 5. Phthisis. 6. G.S.W. leg. 7. Raynaud's disease. 8. Dermatitis exfoliativa, feet and legs.

1	27	7/11	—	148	148	80	80	6	23	—	—	—	120	120	70	70
2	25	7/11	—	80	80	42	42	7	27	27/11	Aff. feet.	145	130	80	80
3	27	—	—	135	132	75	75			30/11	No attack.	130	130	80	80
4	24	—	—	110	112	80	68	8	23	—	—	128	128	90	80
5	26	—	—	130	130	70	70								

Remarks col.: Sl. numb., slight numbness. N.p., no pain. Gr. imp., greatly improved. Mod. sev., moderately severe. Ng., nitroglycerine. Gang., gangrene. T.e., thyroid extract. St., stopped. Aff., affecting. Wa., walking; T.B., tubercle bacilli.

(*a*) Increasing; P.U.O. compli.; KI. (*b*) P.U.O. compli. (*c*) Inc. pain in ankle. (*d*) More pronounced. (*e*) Greatly increased. (*f*) Int. headache, nausea, and vomit; urine examination, tr. of albumin, otherwise negative. (*g*) More pain. (*h*) In legs; up. (*i*) Thyroid extract, gr. 5. (*j*) Improving; walking. (*k*) All night; up.

the fourth phase in an artery as small and as difficultly accessible to the stethoscope as the posterior tibial. In a few cases readings had to be made from the dorsalis pedis owing to the topography of the posterior tibial artery. We desire to state that we attach far less weight to our diastolic readings in the leg, as some of them were obtained with difficulty and occasionally uncertainty. The systolic readings, however, we believe to be clinically accurate.

Clinical and experimental investigation has shown that the iodides exert no direct action upon blood pressure. Although frequently prescribed in cases of arterial hypertension, they are beneficial chiefly in syphilitic individuals, and even in these their action is indirect, and their blood-pressure lowering effect slight.

The number of cases of "trench foot" on which we have made blood-pressure estimations to date is 53. Pressures were also taken on eight other cases not suffering with "trench foot" to serve as controls.

With but one exception an inequality of the leg and arm pressure was found in the 53 cases of "trench foot," consisting in a very definite increase of the leg over the arm pressure. In the one exception the arm pressure exceeded the leg pressure; after 48 hours reverting to the condition found in the other 52 cases. In the eight cases used as controls the pressure was found equal in the arm and leg.

The leg pressure was also found increased in direct proportion to the severity of the case. As the patient's condition improved the pressure was found to drop, or in some instances, few in number, the arm pressure would rise, and by the time the patient had recovered, the arm and leg pressure had become equal; 13 cases so far have been observed which show this phenomenon. These 13 cases, together with the 7 suffering from other conditions, justify the conclusion that the differences observed in "trench foot" cannot be ascribed to some technical fault in our blood-pressure readings. The differences in arm and leg pressure are as follows: the maximum 30 mm., the medium 15 to 20 mm., the minimum 8 to 10 mm. In 31 cases potassium iodide in 20 gr. doses three times daily was given, with the result that there was a decided relief of pain in 24 hours after the first dose had been given. There was also coincidently with the relief of pain in many of the cases a fall of pressure, an average drop of the leg pressure of 10 to 15 mm.

In all of the 31 cases the potassium iodide was withheld for 24 hours on three occasions. The complaint from the patient the following morning was increased pain and insomnia. In some of the cases the dose of potassium iodide was increased to 30 gr. three times daily, as 20 gr. did not seem sufficient to control the pain.

We have not used sodium bromide, Dover's powder, morphine tartrate, or any other form of hypnotic in 29 out of 31 cases. The potassium iodide seemed more beneficial in the relief of pain than any of the above-mentioned drugs. The two remaining cases were given 5 gr. each of Dover's powder at night for four consecutive nights. Both of these patients were severely affected; one had a gangrenous degeneration of the small toe, and the other case marked discoloration and blisters of both feet. One of the 29 cases treated with potassium iodide alone was also a severe type with marked discoloration and blebs of both feet. The potassium iodide was sufficient in this case to control the pain.

It must not be understood that the relief from pain is absolute, but we feel thoroughly convinced from comparing the cases treated with potassium iodide with others treated by the ordinary methods that the relief is greater in the cases in which the potassium iodide alone has been given, and that the duration of the attack is markedly shortened.

The only other treatment used in these cases has been hot-water bottles to the soles, boric powder dusted on the feet, and flannel bandages.

Bethnal Green guardians have had under consideration the medical arrangements of the infirmary, particularly from the point of view of the surgical work, and have come to the conclusion that it would be in the interests of the patients if an assistant medical officer were appointed who was a skilful surgeon, but who would also assist with the ordinary medical work of the infirmary. They have accordingly appointed Dr. G. Cooke as assistant medical officer.

REPORTS FROM THE PATHOLOGICAL LABORATORIES

OF NO. —— GENERAL HOSPITAL, ALEXANDRIA.

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Introductory Note.

THE following are abridged reports on work done in the Patholcgical Laboratories of the No. —— General Hospital, Alexandria, during the period 1916-17 on the subjects specified and by the respective authors named at the head of each report. The authors hope, when circumstances permit, to deal more fully with some of the subjects discussed.

They are much indebted to Colonel C. W. R. Healey, C.M.G., A.M.S., officer commanding this hospital, for constant encouragement, for his kindness in placing the hospital records freely at our disposal, and for help in preparing the statistics. They wish duly to acknowledge the valuable work done in these laboratories by Captain Willmore and Captain Shearman, who were both on the staff of the hospital during the year 1916. They are particularly indebted to them for the data on bacillæmia due to organisms of the enteric group. Corporal Jenkins, B.A., B.Sc. Lond., rendered invaluable service in the laboratory.

I.—BACILLÆMIA DUE TO VARIOUS ORGANISMS.

By Captain THOMSON and Captain HIRST.

The following is a brief description of our technique for hæmoculture :—

The primary culture-medium is 2 per cent. sodium taurocholate broth; 10 c.cm. of the blood are injected into a flask of medium which is incubated for 24 to 48 hours. The medium used for plating was a 1 per cent. lactose azolitmin agar with a trypsinised broth base. Colonies of *B. paratyphosus A* are sometimes late in appearing on plates, which are incubated for two days before negative report is issued. It is hardly necessary to emphasise the need for a rigidly aseptic technique in withdrawing blood and controlling sterility of the various media in work on bacillæmia due to organisms such as *B. fæcalis alkaligenes* and *B. coli*, capable of a saprophytic existence. All cases of continued fever of doubtful etiology are blood cultured as early as possible after admission. The septicæmic stage of enteric infections being almost limited to the period of onset of pyrexia, the prospect of a positive result is greater at beginning.

The results of hæmocultures during 1916 are as follows:—

	Negative.	Typhoid.	Para. A.	Para. B.	*B. fæc. alk.*
Jan.-March	260	2	42	4	1
April-June	115	3	10	1	14
July-Sept.	107	6	12	3	4
Oct.-Dec.	43	1	3	1	4
Totals	525	12	67	9	23

Geographical Distribution of Above Cases.

Salonika	1	2	1	2
Mesopotamia	—	10	—	1
Egypt	11	55	8	20

The incubation of *B. fæcalis alkaligenes* infection is unknown. If less than a week all the cases may have originated locally. In addition to above we have reports for last quarter of 1915 of 51 isolations of *B. paratyphosus A* (27 local and 24 from Dardanelles), 17 isolations of *B. paratyphosus B* (8 local and 9 Dardanelles) and 20 *B. typhosus* (15 local and 5 Dardanelles).

The Gallipoli expedition seems to have been the principal focus of *B. paratyphosus B* infection. During first quarter of 1917 only six isolations of *B. paratyphosus A* and six of *B. fæcalis alkaligenes*; none at all of *B. typhosus* or *B. paratyphosus B*. Number of admissions of cases clinically enteric greatly diminished during last quarter of 1916; comparatively few so far in 1917. There have been a few cases lately at first regarded as clinically enteric in which temperature came down early. They had been inoculated with T.A.B. vaccine and were probably abortive attacks of enteric. The blood cultures were negative.

We have records of seven isolations of *B. paratyphosus A* at intervals of one month, four months, four months, one month, two months, two months, twelve months after receiving doses of T.A.B. vaccine. Two isolations of *B. paratyphosus B* after intervals of two months and six months, and one isolation of *B. typhosus* seven months after T.A.B. inoculation.

The question of value of agglutination test for diagnosis of enteric infection after T.A.B. inoculation has received much attention at another laboratory in the same endemic area. The problem is full of difficulty. Our limited experience has led us to believe that a series of accurate titrations of the agglutinating titre of patient's serum at different stages of disease against T.A.B. emulsions will often help in diagnosis. Isolated tests are of little or no value. The great difficulty is not so much initial rise in inoculation agglutinins, but the low specific agglutinating response of many cases of paratyphoid A infection.

B. fæcalis alkaligenes *Bacillæmia.*

The chief interest of the results of our series of hæmocultures lies in the number of isolations in pure culture of *B. fæcalis alkaligenes* and *B. coli*.

Altogether the former has been isolated no less than 23 times from the blood of patients at this hospital since December, 1915. Eleven of these cases have been already reported by Shearman and Moorhead, and 12 by one of us. All of these cases agree in running a more or less characteristic clinical course as described by Professor T. G. Moorhead and by Captain Blood.

B. fæcalis alkaligenes bacillæmia is associated with mild or moderate degree of pyrexia usually of short duration; temperature very irregular, sometimes intermittent. No spots or splenic enlargements. Symptoms indefinite, patient usually presenting toxic appearance out of proportion to symptoms.

One of us (L. F. H.) has made a special study of some of the strains of *B. fæcalis alkaligenes* isolated from these cases.

Their characters agree closely with Klimenko's Subgroup I. of the organisms described as *B. fæcalis alkaligenes* and probably belong to the same species. A typical strain may be briefly described as follows: A sluggishly motile, Gram-negative, pleomorphic bacillus with flagella at each pole. No liquefaction of gelatin. Abundant growth on ordinary culture-media at 37° C. In broth often pellicle on surface of fluid, general turbidity, and some deposit. Litmus milk is rendered intensely blue. Alkali formation in all ordinary carbohydrate media; does not form indol. Non-pathogenic for guinea-pigs. Some strains have great power of reducing neutral red, litmus, and clarifying milk. Specific agglutinins to homologous organisms were formed in blood of several cases, but not in larger dilution than 1/200. *B. fæcalis alkaligenes* is common in dust and dirt and contaminated water-supplies in Egypt. It was originally described by Petruschky as a saprophyte and has been isolated from a variety of sources outside human body.

With a view to throwing additional light on its pathogenicity a series of 100 stools from enteric and dysentery convalescents were examined by special methods for this organism and 50 stools from patients and orderlies who had been free from definite gastro-intestinal disorders for several months previously. A very striking result was obtained.

B. fæcalis alkaligenes not found in any of the normal cases; isolated from no less than 45 per cent. of abnormal stools. Probably the organism is capable of multiplying in certain abnormal conditions of the bowel.

The alterations in the bacterial flora of the intestine associated with infection by organisms of enteric and dysentery groups do not appear to have received sufficient attention.

The return to normal seems to be delayed much longer than is commonly supposed and probably does not in majority of cases take place until long after specific organisms have disappeared from the fæces. *B. fæcalis alkaligenes* bacillæmia was preceded in 7 out of last 15 cases by attacks of enteric or dysentery. Nevertheless, many of the other cases gave no previous history of bowel infection. Mild infections with both amœbic and bacillary dysentery may, however, damage the mucous membrane of intestine without producing marked symptoms.

Isolated amœbic ulcers were found post mortem in intestines of several soldiers dead of wounds received on Gallipoli Peninsula, who had no definite symptoms of dysentery during life. In a large proportion of cases of mild bacillary infection in soldiers in camp symptoms are so slight that men do not report sick and the presence of blood-stained mucus may only be detected on systematic examination of the fæces.

After considering all the evidence, our view is that *B fæcalis alkaligenes* is an organism of low virulence to man, perhaps commoner in Egypt than elsewhere, which is capable of multiplying in the bowel under favourable conditions, and occasionally gains access to the blood stream through a more or less damaged mucous membrane, thereby producing a mild enteric-like disease.

B. Coli *Bacillæmia.*

As a rule, *B coli* bacillæmia is purely secondary to some other infection, such as enteric, causing ulceration of mucous membrane of intestine. In several cases, however, its presence in the blood was associated with a mild pyrexia somewhat similar to that produced by *B. fæcalis alkaligenes*, and there was no distinct connexion with inflammatory infections of bowel wall. In two such cases the *B. vesiculosus* type of the genus B. coli was isolated in pure culture.

We note a reference to *B. coli* as the causative agent of a mild febrile illness in Hutching's translation of Besson's "Technique Bactériologique." It is probable that a notable proportion of so-called relapses in enteric and febrile attacks in bacillary dysentery are in reality produced, not by the original infecting organism, but by a secondary invader, such as *B. coli* or *B. fæcalis alkaligenes*.

B. pyocyaneus is another organism which is very common in the fæces of enteric and dysentery convalescents in Egypt and which has

been found in the blood by other observers, but not by us. On the other hand, we have frequently isolated the original infecting organism from the blood during a relapse, sometimes after failing to find it on a previous occasion. In one very interesting case reported by Captain Blood an attack of enteritis due to *B. paratyphosus A* followed upon an attack in which *B. typhosus* was isolated. Each attack had the clinical features usually associated with its respective organism.

Bacillæmia due to B. typhosus *and* B. paratyphosus A *and* B.

There was nothing particularly noteworthy about the strains of these organisms isolated from the blood except that a small proportion of *B. paratyphosus A* cultures were relatively inagglutinable with the Lister Institute specific sera when first isolated.

With a little experience the colonies of *B. typhosus*, *B. para. A*, and *para. B* can be distinguished with some degree of certainty by the naked eye at end of 48 hours. The para. B strains produced much more gas in the sugars fermented than those of para. A.

References.—Shearman and Moorhead: Brit. Med. Jour., Nov. 12th, 1910. Hirst: Journal of R.A.M.C., October, 1917. Klimenko: Centralblatt f. Bakt., xliii, 1907.

II. THE THERMO-PRECIPITIN REACTION AS AN AID TO THE RAPID DIAGNOSIS OF BACILLARY DYSENTERY.

By Captain HIRST.

Both the detection of pathogenic protozoa by the microscope and the isolation of dysentery bacilli by bacterioscopic methods from dysentery stools are somewhat uncertain with the ordinary routine methods, since the number of organisms in the small portion of stool actually examined is very variable in different stages of the infective process and the distribution of these organisms in the stool is not at all uniform.

The isolation of a specific organism clinches the diagnosis, but necessarily takes several days. It is of great practical importance from the point of view of early treatment to devise means of distinguishing clearly between amœbic and bacillary dysentery at the onset, and in the case of the latter to discover what group or groups of dysentery bacilli are the causative organisms, so that an appropriate therapeutic antiserum may be administered without delay. One of the practical drawbacks to the use of the present polyvalent serum is the large dose often required to effect cure of the disease. With a more specific serum the dose could be considerably reduced, with less danger of anaphylaxis and serum disease.

Much information can be derived from the macroscopic and microscopic examinations of the stools (apart from the detection of pathogenic protozoa).

Principle of Method.

An attempt is now being made to utilise the thermo-precipitin reaction of Ascoli for the rapid diagnosis of acute cases of bacillary dysentery having much cellular exudate in the stools. This reaction has already been successfully applied by Ascoli to the diagnosis of anthrax, by Piras, Warner, and Hirst to the diagnosis of septicæmic plague, and more recently by others for other bacterial infections.

At the time this work was commenced (December, 1916) I had not seen an abstract of a paper by Missiroli in the *Bulletin of Tropical Medicine and Hygiene* in which the principles of the application of the thermo-precipitin test to the diagnosis of bacillary dysentery had already been investigated with positive results.

I had already employed a technique similar to that recommended by Missiroli.

The principle of the method is briefly as follows:—

Saline extracts from the tissues containing large numbers of certain bacteria or from pure cultures contain highly thermo-stable precipitogens capable of resisting boiling. The amount of precipitogen naturally depends on the number of bacteria present in the extract at the time it was made. Definite reactions are only obtainable from emulsions containing the specific organisms in large numbers.

If a clear filtered extract from such an emulsion of the infected material be superimposed on an immune serum containing the homologous antibodies a precipitate will appear in ring form at the line of junction of the two fluids, and ultimately a precipitate may fall to the bottom of the tube. It is necessary that the filtrate containing the bacterial antigens should be clear and colourless. It is here that the principal difficulty lies in the practical application of the test to dysentery stools if the use of elaborate apparatus, such as filter-pumps and candles, is to be avoided. Simple boiling and filtering through hard filter-paper does not usually suffice to obtain a sufficiently clear filtrate of the salt solution extract if the suspected material contains much fæcal matter. Thus out of 13 attempts to obtain a clear solution of the precipitogens from cellular exudate contained in stools of cases of acute bacillary dysentery only five were successful and two of these five extracts were opalescent. Experiments are now being made with a view to finding out the best method of overcoming this difficulty by simple means. Control experiments on the value of the method and its specificity have been carried out with extracts from amœbic stools in man, muco-purulent discharge from a case of carcinoma of the rectum, the local lesion and bowel contents of rabbits injected subcutaneously and intravenously with dysentery bacilli, and heated three weeks' broth cultures of these bacilli.

This series of experiments is still incomplete, but the results already obtained are definitely in favour of the specificity and practical applicability of the method. The results will be published in detail in a future communication.

Three sera have so far been employed in these tests. The polyvalent antidysenteric serum of the Lister Institute, the agglutinating sera of the same Institute, and the serum from a rabbit hyperimmunised to the Shiga bacillus. The agglutinating sera are put up in a 1 in 10 dilution, which renders their specific gravity too low for the ring method.

Particulars of Results.

The following particulars may be given of the thermo-precipitin test with the five extracts already mentioned. The same bulb of the polyvalent therapeutic serum was used. Emulsions from a recently passed stool were prepared by shaking up the blood and mucus in salt solution.

Excess of clear mucus and any small quantities of fæcal matter are withdrawn with a platinum loop, leaving as far as practicable one part of the cellular exudate to about six of salt solution. The emulsion was then boiled for five minutes in a water bath, cooled, and filtered through a double thickness of filter paper. An extract which is still a little turbid may often be clarified by repeating the process.

The extracts were superimposed on the serum in small tubes by means of a pipette with a capillary point.

No. 1.—Moderately severe case of bacillary dysentery. Strain No. 47 (Flexner type) isolated 30/11/16. Two negative examinations for *Entamœba histolytica*. A distinct ring formed in 12 hours, faint cloud visible at line of junction of extract and serum a few hours previously.

No. 2.—Acute case of bacillary dysentery. Strain No. 50 (Shiga type) isolated 8/12/16. Two negative examinations for *Entamœba histolytica*. Marked ring in 12 hours.

No. 3.—Very acute case of mixed bacillary and amœbic dysentery. Strain No. 54 (Shiga type) isolated 13/12/16. *Entamœba histolytica* found 14/11/16. Marked ring in six hours.

No. 4.—Subacute case. Stool contained much fæcal matter. Strain No. 65 (Flexner type) isolated 9/11/16 and again during convalescence. Two negative examinations for *Entamœba histolytica*. Good ring in six hours.

No. 5.—Moderately acute case. Strain No. 59 (Shiga type) isolated 16/12/16. Three negative examinations for *Entamœba histolytica*. Good ring within three hours; precipitate in 24 hours at bottom of tube.

All these cases recovered without complications under serum treatment. The specimens were obtained before the serum had been injected. Controls were put up with anti-streptococcal serum and clear extract and a clear extract alone. A faint ring sometimes appeared in 24 hours with the serum control. No precipitate appeared in the clear extract.

It is of interest to note that different bulbs from this serum varied in the distinctness of the reaction obtainable with the same extract.

The particular bulb used in this experiment was free from precipitate, but as a rule our stock of serum contains a marked precipitate, which must be allowed to settle before use.

All the plates from these extracts before heating showed numerous colonies of the infecting organism. Negative results were obtained with two extracts from stools from which atypical strains were isolated which did not agglutinate with the polyvalent serum used in test.

These reactions must be considered weak in comparison with those obtainable from extracts of men or animals dead of septicæmic plague against Yersin's serum.

Good reactions within five minutes have been obtained with heated broth extracts of *B. dysenteriæ* (Shiga) against the serum of a hyper-immunised rabbit, and within 15 minutes with the Lister Institute therapeutic serum.

I consider that with an improved technique and the use of high-potency sera prepared specially for the purpose rapid reactions should be obtained in most cases of bacillary dysentery in the acute stage.

The control experiments so far undertaken indicate that the reaction is highly specific for the different groups of dysentery bacilli.

References.—Ascoli (1911): Cent. für Bakt., vol. lviii. Missiroli (1915): Policlinico, Oct., p. 1339. Piras (1913): Cent. für Bakt., lxxi., Sept. Phillip and Hirst (1917): J. of Hygiene, Feb. Warner (1914): J. of Hygiene, Nov.

ACUTE INFECTIVE OPHTHALMOPLEGIA, OR BOTULISM.

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HAVING met with no less than seven cases within a fortnight, I wish to draw attention to a disease which is little known, though dangerous and difficult to treat. The cases were scattered over London between Wandsworth, Clapham-road, Marylebone, Paddington, Harlesden, and Palmers Green. Botulism is said to be due to infection of meat or fish with the *Bacillus botulinus* (botulus, a sausage), ham or sausage being said to be the usual source of the poisoning. The organism is anaerobic, and was described in 1896 by van Ermengem. A good description of the disease was published by Durham in the *Clinical Journal* for June 7th, 1899. Of the seven cases I have recently seen, the first corresponds fairly closely with the description there given.

1. Incubation period not less than 12–24 hours.
2. Arrest or hypersecretion of salivary or bucco-pharyngeal glands. (The collection of thick mucus in the nasopharynx is characteristic and distressing.)
3. Ophthalmoplegia externa and interna, ptosis, mydriasis, divergent strabismus, and diplopia.
4. Dysphagia, aphonia, intractable constipation, and retention of urine. Vomiting occasionally troublesome.
5. Disturbances of circulatory and respiratory systems are of frequent occurrence, and may lead to death by bulbar palsy.
6. Absence of fever and of disturbances of sensation and of intelligence.

The first case I saw was an officer, aged 28, under the care of Captain Sir John Broadbent at the 3rd London General Hospital, Wandsworth, on March 27th.

On the morning of March 22nd he had some sausage, and at lunch some lobster. The next morning his throat was dry, and in the evening and night of the 23rd he had frequent vomiting, and difficulty in swallowing first showed itself on the evening of the 24th, with diplopia. Since then his condition had varied little. There is bilaterial ptosis, with divergent strabismus and weakness of the upward and downward movements of the eyes, dilated fixed pupils, dry tongue, total paralysis of swallowing, paralysis of the palate, and bilateral facial paralysis, with reaction of degeneration of the orbiculares palpebrarum et oris. Retention of urine has been troublesome, with obstinate constipation. The deep reflexes and plantars are normal. No weakness of the limbs. He is constantly drowsy, and there has been delirium at night on several occasions, though his intelligence is perfectly acute in answering questions. Owing to the total paralysis of swallowing he has to be fed by tube, but so far he has maintained his strength fairly well, hypodermic injections of 1/20th gr. of strychnine being given three times daily.

The remaining six cases of acute infective ophthalmoplegia which I have since seen have shown some notable variations from the classical type of symptoms above described. None has shown any paralysis of swallowing, though one has died with failure of respiration.

In two of the cases, both men, aged 36 and 47, the symptoms commenced with soreness of the throat and œdema of the fauces, staphylococci growing from the swab in one case and streptococci in the other. Pyrexia has been present in most of the cases, usually oscillating about 100° F. Retention of urine has been present in five of the seven cases. In two of the cases there has been very marked delirium, with visual and aural hallucinations, picking at the bedclothes, pointing at imaginary objects, and muttering, though the intelligence is quite active in answering questions perfectly rationally and at once. This delirium indeed was definitely thought to be delirium tremens in one case by the doctor in charge, though the type of delirium was just as active and busy, with hallucinations, in another case of a young woman who was taken ill on Good Friday, March 29th, after eating heartily of tinned salmon the previous evening. The next morning she had diplopia, with double ptosis, and was very drowsy, sleeping through most of the church service. She was pregnant and at nearly full term. Pyrexia of 103° was noticed, though she refused to send for her doctor until April 2nd. Dilatation of the os and completion of delivery of a fine infant has not apparently influenced the course of the disease, which has continued with double third-nerve paralysis, drowsiness, pyrexia of 100°, retention of urine, and increasingly active delirium up to the time of writing (April 14th). A tin of salmon of the same batch as that which was eaten by this lady at Palmers Green on the day before Good Friday was supplied to me by her husband on Saturday last, and forwarded to Dr. John Matthews for bacteriological examination. He has just reported to me that he has found in it "a large gas-producing, anaerobic, Gram-positive, and probably spore-bearing bacillus." This, so far, resembles the *Bacillus botulinus*, and experiments with it on animals are to be undertaken at once.

One patient, a girl aged 18, now under my care in St. Mary's Hospital, is apparently recovering, the ptosis having nearly disappeared, and the eye movements are now practically normal. She had marked drowsiness for some days and transient retention of urine, but on only one occasion was pyrexia of 100° noticed. A curious feature of her case is the presence of a typical extensor plantar reflex on the right side, though she shows no other sign of limb paralysis.

In only one of my seven cases has there been paralysis of swallowing and completely dilated pupils, according to the classical description. Two have shown facial paralysis, one being bilateral.

The striking features common to all the cases have been the acute onset of double third-nerve paralysis, incomplete, with bilateral ptosis and diplopia, and well-marked drowsiness. Pyrexia has been present in the majority, and retention of urine in five cases. Obstinate constipation has been present in all, and delirium in four of the cases, being very active and resembling delirium tremens in two cases. The optic discs have been normal in all, and the cerebro-spinal fluid also has shown nothing abnormal, except an excess of lymphocytes in the case with the staphylococcal throat.

The source of the infection seems most obscure. Two cases followed eating sardines, and another after tinned salmon, but there is no proof as yet of cause and effect.

The morbid anatomy is probably an acute polioencephalitis superior—an acute toxic inflammation of the grey matter in the neighbourhood of the third nuclei. In my one fatal case no gross changes were found post mortem, and the brain is now being hardened for microscopical section.

In the first case described, Captain Harrison, R.A.M.C., at the 3rd London General Hospital, has succeeded in growing an organism from the stools and the urine which resembles closely the morphological characteristics of the *Bacillus botulinus*, but pure cultures have not yet been obtained in order to prove its identity by experimental inoculation.

The action of the poison produced by the organism is strongly neurotoxic, resembling in some respects that of diphtheria or tetanus. The prognosis is serious, though by no means hopeless, yet the bulbar paralysis may last many weeks. The treatment that seems to be indicated is to clear the intestinal tract with calomel and enemata and to give regular hypodermic injections of strychnine, in order to combat the toxic action of the bacillary poison upon the nerve centres. An antitoxin was formerly prepared by Kempner and Pollack, but is not now available.

NOTE ON AN EPIDEMIC OF

TOXIC OPHTHALMOPLEGIA

ASSOCIATED WITH ACUTE ASTHENIA AND OTHER NERVOUS MANIFESTATIONS.

BY ARTHUR J. HALL, M.A., M.D. CANTAB., F.R.C.P. LOND.,

PROFESSOR OF MEDICINE, UNIVERSITY OF SHEFFIELD; SENIOR PHYSICIAN, SHEFFIELD ROYAL HOSPITAL; MAJOR, R.A.M.C. (T.F.).

DURING the last two or three weeks a series of cases presenting somewhat remarkable features has come under my notice in this district. The first few cases that I saw varied so widely from one another in their individual details that I failed to see any connexion between them, excepting that they were all inexplicable and that I had never seen anything quite like them before. As these unusual clinical pictures kept recurring (up to the present I have seen 10 cases) it became evident that they were related to each other and probably had a common origin. I hope to publish fuller details at a later date. Meanwhile, a brief record of their occurrence seems desirable in the public interest, in order to ascertain whether other cases, either isolated or in groups, have been observed elsewhere, and, if so, to prevent a further spread of the epidemic, if epidemic it be.

Description of Cases.

The main features of the cases so far observed are as follows:—

The patient, whilst in ordinary health, begins to be languid and drowsy, with or without headache, and other symptoms of malaise. In a few hours or days the weakness has increased very much, and, indeed, may amount to complete prostration, so that he lies helpless in bed and can hardly move a muscle. Together with this the drowsiness becomes more marked and develops into real lethargy. Pyrexia may be absent throughout, or it may be present from the first, become severe, and persist. Cerebral excitement and delirium has been a prominent feature in some of the cases. In most of them local symptoms pointing to lesions in the bulbo-pontine area are present at some time or other. Of these ptosis, ophthalmoplegias of various extent, nystagmus, facial palsy of lower neuron type, unilateral or bilateral, speech affections, and dysphagia have occurred, in different combinations in different cases. Muscular tremors of a curious kind have been noted in some; in one case this formed the most prominent symptom, and alcoholism was suspected. In some cases the general muscular asthenia has been more marked on one side of the body than on the other—either arm alone or arm and leg. But there has been, as yet, no evidence of a localised limb paralysis such as one commonly sees in acute poliomyelitis.

I have divided the cases provisionally into two broad groups: (1) the meningitic; (2) the asthenic. Such a division is really impossible to maintain, as some of the cases have symptoms common to both, whilst one case with complete facial diplegia had neither meningeal nor asthenic symptoms throughout. However, the division has some temporary advantages.

1. *Meningitic.*—These cases simulate meningitis very closely, and at a certain stage it is almost impossible to be sure they are not. It is not necessary to go into details now, but the important facts are that so far the cerebro-spinal fluid has shown no organisms or abnormal cells and its pressure has not been increased, and that in a few days the symptoms subside and improvement sets in. Four of the cases were of this type.

2. *Asthenic.*—The asthenic group presents a very different clinical picture. Drowsiness and languor replace excitement and delirium. The patient without any obvious cause is rendered quite helpless, and lies in bed like a log, unable to turn over or to move the limbs without assistance. There is usually no pyrexia throughout. The effect of the muscular asthenia in the neck and face is very extraordinary. Perhaps it may best be described by the impressions which single cases gave me when I first saw them. The first case of the series was a boy aged 15. The facies suggested a myasthenia gravis. In another case, a woman aged 56, the facial expression was so suggestive of "Parkinson's mask" that I thought at first she must have paralysis agitans. As a matter of fact, this was the case referred to above in which general muscular tremors were the chief symptom. In a few days the symptoms disappeared. In this group there is also a peculiar posture of the hands across the trunk and a kind of plastic tone, not unlike that seen in paralysis agitans. The tremor, however, has no resemblance to the tremor of that disease. Although in most of the cases the symptoms begin to disappear in a few days or a week or two, yet in one case, a man, they still persist after three weeks. The sphincters are not as a rule affected.

Other particulars of the 10 cases seen up to the present are as follows:—

Males, 4; females, 6. Ages range from 9 to 70. Only one is under 10. Eight are above 20. Time of onset: Ten began in March, one in April. Locality: Seven occurred in Sheffield, two in neighbouring town in Notts, two in country town in Derbyshire. The cases in the Notts town were both in the same street, those in the Derbyshire district were in neighbouring streets. Of the Sheffield cases only two occurred in the same district. In none was there any other case of illness in the same house. One of the Sheffield cases began whilst in hospital suffering from another complaint. No other case had occurred before in that hospital, nor has any, as yet, arisen there since.

Etiology.

All the cases are now, apparently, out of danger and may be said to be convalescent, but none of them have as yet completely recovered, whilst two are still in a serious condition. It is therefore too soon to consider them as a whole. At first the occurrence of three cases of facial diplegia within a few days made this symptom more prominent than anything else, and one naturally thought of the usual causes of such a lesion. It may at once be said that in none of them was there any evidence of exposure to cold, trauma, ear disease, rheumatism, or syphilis. There was nothing to suggest diphtheria, and swabs from the throat in all the cases examined for this were negative. As was mentioned above, lumbar puncture was done in the meningitic cases, sometimes more than once, but nothing abnormal has yet been found either as regards quantity or quality.

Whatever may prove to be the nature of this series of cases, it is evident that it is something which acts as a widespread poison upon the central nervous system. Such a poison might be of organic or of inorganic origin. At a time when dietetic conditions are undergoing such continuous changes, it is not unnatural to wonder whether these cases may be connected with some poisonous element in the food or some deficiency of essential ingredients. As yet there is no positive evidence to offer as to the etiology of these cases, but on the whole, so far as the evidence goes at present, it points to some infective organism rather than to a deficient or poisonous food-supply. Further than that it is unwise to go at this stage. Possibly before the outbreak is done with something conclusive may show itself; at present it is enough to state the facts which have been observed.

PS.—Since writing the above my attention has been called to the similarity between these cases and certain outbreaks of botulism, due to the consumption of food infected by *B. botulinus*. Such reference as has been possible to descriptions of this affection is suggestive, and investigations on these lines are proceeding. So far, only in one case (No. 6) has the patient in any way attributed the illness to food. It emphasises the importance, should fresh cases arise, of making a detailed inquiry about the foods as soon as ever the cases are recognised. If not, such details are often difficult to obtain, owing to the mental condition of the patient and the forgetfulness of the friends. In conclusion, I desire to express my grateful thanks to many colleagues, who have rendered much help in regard to these cases.

Brief Epitome of Cases.

1. W. W., male, 15, began March 7th. Asthenic type. Complete muscular prostration; diplopia; tremors; facies of myasthenia gravis; no pyrexia; no delirium. Left arm and leg worse than right. K.J. present. Recovering steadily; diplopia persists.

2. Nurse W., 23, began March 11th. Pain left temple, dizziness; acute meningitic symptoms later. Ophthalmoplegia, nystagmus, facial diplegia, delirium, pyrexia, tremors. K.J. present; no Kernig. C.S. fluid normal. Recovering.

3. Mrs. M., 26, began March 1st. Vague pains in ankles; no pyrexia. March 17th: Facial diplegia which persists; no asthenia, no other symptoms.

4. E., male, 26, began March 17th. Malaise, dizziness; went about till March 27th, then acute meningeal type; delirium, ophthalmoplegia, nystagmus, right facial palsy, pyrexia, asthenia. Recovering slowly, still very apathetic; marked nystagmus persists.

5. B., male, 37, began March 25th. Languid and drowsy; no delirium, no pyrexia, except one evening at onset; extreme general asthenia; ophthalmoplegia, nystagmus, facial diplegia, dysphagia, muttering speech; K.J. absent; tingling in hands and feet, some loss of sensation; remains in same condition.

6. Mrs. V., 56, began about March 7th. Asthenia and general tremors of arms and legs; facies like "Parkinson's mask"; no pyrexia; no delirium; no cranial palsies. Recovering well.

7. Mrs. S., 70, began March 30th. Sudden weakness and tingling in arms; rapid general asthenia; ptosis, slight nystagmus; no pyrexia, no delirium. Result not yet known.

8. Miss B., 17, began March 7th; headache, dizziness, photophobia; ophthalmoplegia marked; no pyrexia; vomiting; rash on arms and legs; asthenia considerable; recovering; diplopia persists.

9. H., male, 55, began March 25th; cough and progressive asthenia; meningitic type; no pyrexia, delirium marked, ophthalmoplegia; right facial palsy; muttering speech; nystagmus; condition unchanged.

10. May C., 9, began March 31st; pain over right eye, vomiting, delirium; pyrexia severe, 105° F. on several occasions; lies with eyes closed in cataleptic state; ophthalmoplegia slight and variable, nystagmus; condition persists, but less severe.

Sheffield.

THE LATE MR. WILLIAM HENRY FORDHAM, L.R.C.P., L.R.C.S. EDIN.—Mr. W. H. Fordham, a well-known practitioner in Sheffield and district, where he took a prominent part in municipal affairs, died last week at his residence, Kent House, Heeley, in his fifty-ninth year. He was born in the Fiji Islands, where his father spent many years as a Wesleyan missionary, and after qualifying at Edinburgh in 1886 went to Sheffield, where he practised for over 30 years. His kindly nature and practical benevolence endeared him to a wide circle of the community.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTE ON A CASE OF INFECTION WITH *BOTHRIOCEPHALUS LATUS*.[1]

BY T. T. O'FARRELL, F.R.C.S. IREL.,
PATHOLOGIST, ST. VINCENT'S HOSPITAL, DUBLIN, ETC.

THIS is the second specimen of this tape-worm I have met with. The details of the first case were published in 1916.[2] I have to thank Dr. J. N. Meenan for leave to bring forward the present specimen.

The patient, a young woman, came under observation in December, 1917. Her symptoms somewhat simulated gastric ulcer, but, owing to the history, an anthelmintic was administered and this tape-worm was passed. The blood was examined on the next day with the following result: Red cells, 4,640,000 per c.mm.; hæmoglobin, 91 per cent.; colour index, 0·9; white cells, 8000 per c.mm. Stained films showed the red cells to be practically normal; there was very slight irregularity in the size of the corpuscles, but there were no definite microcytes or macrocytes. No nucleated red cells were found. The differential leucocyte count per cent. was: Small lymphocytes, 25·0; large lymphocytes, 13·5; hyalines, 9·0; polymorphonuclears, 51·0; eosinophiles, 1·0; basophiles, 0·5. Thus, there was practically no anæmia and no eosinophilia.

As to history, the patient had never been out of Ireland, and lived in the County Leitrim near the river Shannon. Six years ago she had been in an infirmary, where she was treated for tape-worm. She began to complain again about two years ago, with symptoms of gastric ulcer. She had occasionally eaten the following fish, fried: Pike, perch, trout. She did not remember having eaten any badly-cooked fish. She did not know any other person who "suffered from tape-worm" in the district.

The patient came from a town 15 miles up the river, from the place in which the other case, a man, resided. The absence of any definite anæmia in these two cases was of interest. Unfortunately, the head of the worm had not been secured.

One noticeable feature about the specimen was that the uterus appeared to have been emptied of ova in the more mature segments without any break in the continuity of the worm, giving this portion of the parasite a ladder-like appearance.

In regard to the preparation of segment-exhibits, for comparison between *B. latus* and *Tænia saginata*, these can be very readily mounted in gelatin-formalin.

PERIPHERAL NERVE LESIONS AFTER ANTI-TETANIC SERUM.

BY S. C. DYKE, L.M.S.S.A. LOND.,
CAPTAIN, R.A.M.C.

IN the literature on the subject of tetanus I have, so far, come across no reference to peripheral nerve lesions, either following the disease or the administration of antitetanic serum to combat it. The following case is of interest:—

Gunner C—— was wounded in the left arm on Dec. 13th, 1917. He received antitetanic serum as follows:—Dec. 13th. 750 units into the right breast; 14th, 750 units into the anterior surface of the right upper arm; 24th. 500 units into the same place. On the 28th he experienced pain and stiffness in the right arm and shoulder, which he states was diagnosed as due to tetanus. On the 29th he was given 16,000 units of antitetanic serum into the abdomen, and on Dec. 30th another 16,000 into the thighs. Apart from the record of the injections no reference to tetanus appears on his medical history sheets. The pain passed off in a few days, but the patient then found that he was unable to raise his right arm above his shoulder.

He was first seen by me on March 9th 1918. The wound in the left arm was then completely healed and function of the limb perfect. The right deltoid and supra- and infra-spinati showed wasting, and their power was completely lacking. There was entire absence of response to the faradic current; to the galvanic the response was weak, but otherwise (so far as I could judge) normal. No alteration could be detected in cutaneous sensibility. The signs pointed to a paralysis of toxic origin of the motor neurones of the circumflex and suprascapular nerves.

The point of interest seems to be whether this paralysis was due to the toxin of tetanus or to the antitetanic serum. Its occurrence in the proximity of the site of three consecutive injections of serum is suggestive. In giving injections of antitetanic serum in rapid succession it might seem advisable to make them into widely separated parts of the body.

Saltash.

[1] Read before the Section of Pathology of the Royal Academy of Medicine in Ireland.
[2] Transactions R.A.M.I., 1916, xxxiv., 272; THE LANCET, 1916, i., 466.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

THE FUTURE OF THE MEDICAL PROFESSION UNDER A MINISTRY OF NATIONAL HEALTH.

A SPECIAL meeting of this society, taking the form of an open discussion by the Fellows, was held on Monday last at 5 P.M., Sir RICKMAN GODLEE, the President, in the chair. The discussion was opened by Surgeon-Major J. F. GORDON DILL, senior physician to the Sussex County Hospital, with a paper upon the Future of the Medical Profession under a Ministry of National Health.

Major DILL said: Although the importance of a healthy people has been vaguely recognised in the past by all civilised communities, it is only of recent years that public opinion in this country has been directed to the fact that the maintenance of the national health at the highest possible standard should be one of the first duties and responsibilities of good government. The State has during this period assumed more and more responsibility in the prevention of disease and has also provided for the medical care and treatment of a gradually increasing proportion of the population. This responsibility has been undertaken from force of circumstances in certain cases, as for soldiers, sailors, school children, prisoners, and paupers, and contracted for in others under the National Health Insurance Act.

The Need for Reconstruction.

The administration of this medical service of the State is divided among many departments—viz., the War Office, the Admiralty, the Colonial Office, the India Office, the Local Government Board, the National Health Insurance Commission, the Home Office, the Ministry of Munitions, the Board of Education, the Post Office, the Board of Trade, the Board of Agriculture, the Ministry of Pensions, and others—but without coördination or any central control. As a result of this the value and scope of the service rendered vary in every instance. The Army Medical Service, for example, which is at present an emergency development responsible for over 5,000,000 people, can offer them the very best conditions of scientific treatment, both clinical and institutional, while the National Health Insurance Commission, which supplies the medical needs of some 12,000,000, has, owing to the war, been able so far to place at their disposal very little beyond the unaided services of a general practitioner—good, bad, or indifferent, as the case may be. Large sums of public money are spent upon their medical services by these several departments, and it is not surprising that a demand has arisen for a central authority of national health, which shall coördinate and reconstruct the medical service of the State into a coherent and uniformly well-equipped whole, and which should be in direct control of every detail of its executive machinery. A Minister of National Health has been demanded by sections of the press, and such an appointment has been foreshadowed by several members of the Government, but it is obvious that unless a well-organised administrative and executive machinery were established at the same time the creation of such an office might serve perhaps some political end, but would be of no other practical value. If, however, the Minister could control and direct the whole of the forces dealing with the health of the nation, the possibilities before him cannot be over-estimated. The risk of death in civil life is greater than the risk of casualty in war. Thousands are condemned in conception; thousands are sacrificed at birth; many thousands more become victims in every stage of life to diseases which if intelligently fought would be deprived of their menace in one generation and stamped out in two.

Major Dill then commented caustically upon the opportunism which marks the British character, so that we never face our difficulties until they strike us in the face, and urged that now was the accepted time to establish the care of national health upon a fair basis, taking heed that in a reconstruction, where our policy must keep pace with our knowledge, no individual concerned should be adversely affected in position or sphere of work. Insisting that the executive of any medical service must be members of the medical profession, he reminded his audience of the high capital value to the State of the doctor's work, if represented merely in pounds, shillings, and pence, and of

the great moral qualities required to make up the good doctor. None the less, it would be idle, he said, to expect that the prospects held out by the medical life incline the parents of a brilliant boy to choose this career for him, but he declined to criticise in this connexion the working of the National Insurance Act. While admitting that in some cases the State service of the insured had bettered medical prospects, though the designation of "panel doctor" had been to the detriment of many, Major Dill indicated that a cleavage had been established in the ranks of the medical profession.

He continued as follows: If, as is generally admitted, the principle of National Health Insurance is a good one, why should it be limited in its benefits to certain individuals only, by legislative restrictions which give rise to endless differences of opinion, and create the most curious anomalies? If the principle of compulsion is sound and necessary it is difficult to understand from a national point of view why it should not be extended universally. Nor need such a measure interfere with the present relations between medical men and their patients if properly safeguarded, but, on the contrary, these might be improved to the advantage of both. At any rate, it cannot be doubted that the extension of compulsory health insurance to all classes of the community would at once put an end to most of the conditions established by the Insurance Act which have been so adversely criticised in the press, while it would place the whole system of insurance upon a sound financial basis, and ensure its success as a statesman-like measure in the judgment of the future. At the same time it would be in the highest degree injudicious to place any unnecessary limitations upon perfect freedom of choice between doctor and patient, or to restrict the opportunities of private practice on one side or the other. No hospital provision has been made hitherto for insured persons, and those requiring hospital treatment are obliged to provide it for themselves at nursing homes, or to have recourse to charitable institutions. The result of this has been that the voluntary hospitals have been continually overcrowded, and are, in many instances, obliged to maintain long waiting lists. They are almost universally in debt and are faced with the probability of having to close their wards, either wholly or in part. There are in existence in the country, however, numerous State hospitals, infirmaries and asylums, containing altogether about 300,000 beds, which, with a comparatively small expenditure in alteration and equipment, could be brought up to date, and provide part at least of the necessary hospital accommodation for the insured, as well as for the rest of the community for whose health the State is responsible. If this were done many of the voluntary hospitals would be relieved of a burden which is threatening their very existence, and they could then admit as patients those who were willing and able to pay for their maintenance in hospital, although unable to meet the greater expenses of a private nursing home, and this would meet a long and widely felt need.

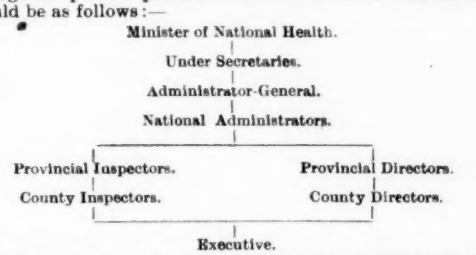
Outline of Scheme.

It would appear, said Major Dill, that the aims to be kept in view in the consideration of a policy for the future of the medical profession under a Ministry of National Health, and which must have promise of fulfilment in any scheme which has the elements of success, are as follows:—

1. The various sections of the Medical Service of the State must be consolidated, coördinated, and controlled by a central authority.
2. The central authority must, through its administration, be in direct touch with every detail of the peripheral executive.
3. In the formation of this administration and executive existing machinery must be used as far as possible.
4. No personal interests must be adversely affected.
5. The Medical Service must be efficient and complete, and have available the best resources for both clinical and institutional treatment for all alike.
6. The conditions of service must be such as to attract to the profession of medicine men of a type which will command the confidence and respect of the public.
7. All administration of medical matters should be in the hands of medical men.
8. Medical officers of the Service other than administrative (or those on probation) should not be debarred from private practice.
9. No avoidable limitation should be imposed upon freedom of choice for either doctor or patient.
10. The cost of administration should not exceed the cost of the Medical Services, which must be reorganised to form it, or impose additional financial burdens upon the public in this respect.

The following proposals would appear to fulfil these conditions: A Department of State should be established to deal exclusively with all matters of National Health under a Minister of Cabinet rank, with Under Secretaries, and an office in London. The higher personnel of the office, who have to deal with medical matters, should, after the transfer to this office of men at present holding appointments dealing with these subjects, be qualified medical men; and the various health functions, now divided among many Government offices, should form departments in the new office, being fused as far as possible after transference.

Major Dill, having pointed out that the Local Government Board has hitherto been mainly concerned with preventive, and the National Insurance Commission with clinical, medicine, while the two functions are entirely interdependent, concluded that it would be obviously in the interest both of the State and the individual to combine them in practice and in administration. He outlined a scheme having such an object in these terms:—In each of these two great branches of national health a chain of administration to be established downwards from the central office, consisting of a staff of medical men, who shall work conjointly and be individually responsible to the Ministry of National Health through the successive steps of higher authority. It is suggested that the scheme of administration could be established by the appointment of an Administrator-General for the British Isles, and National Administrators, under whom there would be on the preventive side 12 Provincial Inspectors, and on the clinical side Provincial Directors and County or Divisional Directors. These officers should not engage in private practice. The chain of administration would be as follows:—



The Executive would consist of district medical officers, consultants in medicine and surgery, specialists and officers in charge of special hospitals, pathologists and bacteriologists, and officers on probation.

The Working of the Scheme.

Major Dill submitted that to make administration of national health successful an unbroken chain must exist between the central authority and the smallest detail of the executive, and as a necessity the country must be divided into districts (of population), with a medical man allotted to each, whose duty would be the care of the health of the inhabitants of his district, directing also the attention of the county inspector to the incidence of any epidemic disease, or to any faults of housing and sanitation. In this way, while as a clinical officer his main relations would be with the county director, he would also be in intimate touch with the preventive side of the administration, and would be the medical officer of health of his own district. In urban areas the district assigned to each district medical officer might be one containing about 3000 inhabitants, but in rural and more sparsely populated areas, where the distances to be covered are considerable, the number of inhabitants in each district would be less, and would vary according to the conditions, and roughly the geographical size of a district would be in inverse ratio to its population. The inhabitants of each district would, unless they had made other arrangements, be attended by the medical officer of the district, but it should always be open to any individual to make a mutual arrangement to be attended by the medical officer of another district, who in that case would assume the responsibilities entailed. In suitable centres of population groups of contiguous districts might be pooled and worked by their medical officers in conjunction, so that, while each medical officer would retain responsibility for his own district, the choice for both doctor and patient would be enlarged, and in this case any difficulty in allotment of those who had made no choice might be arranged by the county director. The district medical officer would himself reside in his own

district, and would be the family doctor of most of its inhabitants. Beyond doing all in his power to prevent disease in his district and in individuals, it would be his duty to keep a continuous record of the medical history of everyone for whose health he was responsible, and to make such returns as should be called for by the county inspector and director under whose administration his district was situated. In case of patients removing to another district their medical histories would be forwarded to their new medical officer through the county director to preserve continuity. In cases of doubt or difficulty or those requiring hospital treatment the district medical officer would call in a consultant or specialist and no patient should be admitted to hospital, except in cases of emergency, without their joint recommendation. It should also be open to the patient to propose a consultation. The district medical officer in country areas would supply the medicine necessary for his patients, but in the towns he might be allowed to prescribe only at the discretion of the county director. A medical man accepting service would not be moved from the district in which he had been hitherto practising, except at his own request. Consultants in medicine and surgery and specialists would be appointed to areas of suitable size, and should be the visiting physicians, surgeons, and specialists of the national hospitals in those areas. Their services as consultants would also be at the disposal of the district medical officers of their areas by mutual arrangement, and their opinion upon each case would be recorded in writing for incorporation with the medical history of the patient. Central laboratories would be established where required to serve surrounding areas, in which all necessary pathological and bacteriological examinations would be made and vaccines, &c., prepared. These laboratories would be in the charge of resident or visiting pathologists and bacteriologists. Candidates for the service would, after graduating, be admitted on probation first for one, two, or more years, during which time it would be open to them to qualify themselves for the special branch of the executive or for the Government service which they might choose, and to this end they would be attached as residents to general or special hospitals, as the case might be. They would also towards the end of their probation be temporarily employed in the relief of district medical officers who were on leave or ill.

Financial Arrangements.

Although the first call upon their time would be for attendance upon the persons for whom they were responsible, all executive officers, with the exception of those on probation, would be allowed private practice if they chose to accept it, at the request of persons not residing in their sphere of work and not upon their list of patients, and in this case they could charge a fee. It would also be open to any member of the community to consult any executive medical officer who consented to advise him upon payment of a fee. It is suggested that perhaps a scale of fees might be established which would increase in amount with the length of the medical officer's service. Every officer in the service would be entitled to 30 days' leave in the year, the arrangements for executive officers being made by the County Director of their area, and those for administrative officers by the national administrator. During each fifth year of his service every executive officer would be required to undertake a three months' post-graduate course which would be arranged for him, and a certificate that he had duly attended and profited by this course would be required before he was qualified for advancement. The existing State hospitals, after being reorganised and properly equipped for the admission of insured persons, would be provided with efficient visiting staffs and resident officers.

The administrative officers would receive a fixed rate of pay proportionate to their responsibilities, and vacancies in administrative posts would be filled from the ranks of the executive. The pay for all branches of the executive would be at the same rate on joining, with an increment every five years in the case of approved officers during the whole period of service. There would then be no pecuniary inducement to choose any particular line of practice by a man unfitted for it. After the fifth period of five years' service all officers would become entitled to a pension. No alien would be admitted to the service.

The basis of the finance of the service would be the extension of the existing insurance for "medical benefit" to all classes of the community. The annual premium for this now paid by the insured is 9*s.* per annum, which with a simpler method of finance, might easily be made 10*s.*, or even more, and if this were considered the proper sum for a universal premium the State would insure the people for whose health it is responsible, while the other uninsured classes would pay a premium for every member of their households with their local taxation licences, and the receipts would entitle them to make their own arrangements.

The insured class number some 12 millions and pay over £400,000 for their medical benefit, but if, as is almost universally agreed, this benefit should be extended to their dependents, a great part, at least, of the additional cost of insurance must fall upon the State. It is suggested that a married man whose wife is not insured should be compelled to insure her, but that he should incur no further liability as regards his children, no matter how large his family might be, but that these should be insured by the State with the rest of those for whom it is responsible. The upkeep of the national hospitals and laboratories, the endowment of medical research, and nursing might be met, and the Poor-rates proportionately relieved, by a universal national health rate to be paid to the Exchequer through the local authorities. Major Dill indicated that a universal rate of one penny in the £ would produce £1,000,000 per annum, and that while the proposals which he had placed before the Fellows did not offer a solution to the many problems which will arise in the future of the medical profession under a Ministry of National Health, like the clay model of a sculptor they might be of use in giving form to the undefined conceptions which are in many men's minds at the present time. He concluded with an eloquent appeal on behalf of medical colleagues who at the call of duty had abandoned their practices and prospects, and who on their return to civil life ought to find a professional career awaiting them in which each had his duly allotted sphere.

Discussion.

Sir ARTHUR NEWSHOLME, after paying a warm tribute to the eloquence and care manifested in Major Dill's address, said that medical life, like other activities, could not be the same after the war. Half the doctors were, or had been, engaged as army surgeons, where they had more leisure and more advantages in the availability of expert consultant advice, laboratory assistance in diagnosis, more modern methods of treatment, and the use of orderlies and nurses. He gave an account of the growth of the means of treatment (such as the number of beds available in institutions, the scheme for the treatment of venereal diseases, maternity and child welfare centres, school clinics, the National Insurance Service, and increased nursing facilities), and said that the great defects were the lack of coördination between institutional and domiciliary treatment and the difficulties created by financial considerations. A Medical Service, if it was to be satisfactory, must supply facilities for treatment and prevention of disease as efficient for the poor as for the rich. Among the means for this were the following: 1. Expert assistance must be as readily available for the poor as for the rich. This was already supplied in the case of the fever and small-pox hospitals, tuberculosis departments, and those for the treatment of venereal disease. There was need for increased collaboration between official and voluntary hospitals and the private practitioners. 2. Means for laboratory assistance in diagnosis should be available. Instalments were already made by the public health authorities for acute infectious diseases, for tuberculosis and venereal diseases. In 1914 a grant of £50,000 was allotted for the formation of pathological laboratories free to practitioners for general pathological work, but the scheme had to be postponed owing to the war. 3. More skilled nursing must be made available for the whole population. Much had been done by the County Nursing Associations, which were subsidised by the Local Government Board up to 50 per cent. of their outlay under certain headings. Every doctor should have at his disposal what nursing facilities he needed. 4. There should be more team-work than in the past, both between the consultant and private practitioner, the nurse and doctor, and between unqualified and qualified persons; much of a doctor's time could be saved by utilising the services of assistants, such as dressers under qualified medical supervision. The fullest and best development of a medical service could only be secured if it were based on a comprehensive realisation that preventive was co-extensive with clinical medicine, as

was illustrated in the case of venereal disease, maternity work, and infant hygiene. So poorly was the latter subject taught in the general hospitals that Sir Thomas Barlow signed a resolution in the name of the National Association for the Prevention of Infant Mortality that infant hygiene be made a part of the medical curriculum.

Surgeon-General Sir BERTRAND DAWSON said that it seemed as if there must be State-aid for medicine in some form or other. The best means for the treatment of disease should be open to all and medicine seemed in some measure to be following in the steps of education by passing from the voluntary to the State position. The maintenance of health and the curing of disease had become increasingly complex and costly, so that the best treatment was decreasingly available for a large number of the population. This would be especially marked after the war, as there would be more poverty. He was forced to the conclusion that medicine could no longer be self-supporting; State support was needed. Every new invention added to the cost of the upkeep of a hospital. The hospitals should be equipped as perfectly and completely as possible; therefore hospitals and private practice must be State-aided. Discussing schemes of State aid he said that: 1. The medical profession might become part of the Civil Service. This, he thought, would kill all that was best in the profession. The difference between the minimum and the best was greater in medicine than in anything else. The patient wanted a human being of his own choice and not an official of the State's choice. 2. Payment might be made partly by the patient and partly by the State and this was the principle of the National Insurance legislation, and quite a sound principle. He agreed that curative and preventive medicine must come together and held that there should be a teacher of preventive medicine at every teaching school. Much depended upon the general practitioner. He must be identified with the locality and be both the curer of disease and father of his people; therefore his life must be made more attractive. In a small centre of about 2000 to 3000 persons the medical practitioners of the place should have charge of preventive and clinical medicine and the practice should have as a focus a hospital properly surrounded by centres for the various clinical developments of special and preventive medicine and supported by a bacteriological laborotory. These buildings would be the charge of the State, and in such an endowment Sir Bertrand Dawson saw the best form of State aid.

Dr. BENJAMIN MOORE said that two great objections were urged against a Civil Service: (1) That it turned the profession into a machine; and (2) that there was no choice of doctors. He thought that there would be more choice of doctors under a whole-time service than otherwise. The hospital should be the unit, and attached to the hospital each doctor should have his consulting-room rather than at his private house. There would be certain hours at which he would attend, and the patient could wait at the consulting-room of whichever doctor he wished to consult. He disagreed with the opinion that a doctor gave better work if paid so much per consultation than if he were paid a stated salary. If a man took up scientific work nothing would hold him back from doing his best.

Dr. LAURISTON SHAW said that we ought at once to establish a classification of our professional functions. Instead of preventive and clinical medicine we should have State health as a whole and individual health—that is, social hygiene and personal hygiene. The consultant should make it a point never to undertake general practice, and not to see a case unless it was in charge of a general practitioner.

The PRESIDENT regarded the poor and the rich as well provided for, and he would rather say that adequate treatment for the lower middle classes was wanted. Owing to the lateness of the hour he did not call upon Major Dill to reply.

SECTION OF PSYCHIATRY.

War Shock and Freud's Theory of the Neuroses.

A MEETING of this section was held on April 9th, when Dr. ERNEST JONES read a paper, entitled "War Shock and Freud's Theory of the Neuroses," in which he dealt with the view that the facts observed in connexion with the war neuroses are antagonistic to Freud's theory of the neuroses, while he maintained, on the contrary, that these facts afforded a confirmation of an important part of the theory, while the unconfirmed part has as yet not been adequately investigated in the cases of war neurosis.

Dr. Jones said: The theory is expounded in five statements, of which most observers of the psychology of war neuroses have largely confirmed the first three. These are: (1) That psycho-neuroses are of volitional origin, that they are produced by a purposive will, though not, it is true, by the whole of the patient's conscious and deliberate intention. (2) They are the result of an intra-psychical conflict between what may be called "ego-ideals" and tendencies alien to and disapproved of by these. In the case of war neuroses there is perhaps always a conflict between the instinct of self-preservation and the desire to escape from the horrors of warfare on the one hand, and the motives leading to continuance at duty, with shame at fear, on the other. (3) The volitional impulse or wish leading to the production of the neurosis is "repressed" and unconscious. In the case of the wishes just mentioned this is partly the case—that is, the desire to escape to safety at the expense of other considerations is "repressed" by the ego-ideal and is only half-conscious, sometimes hardly at all so.

The principles that have not been investigated, and therefore not yet confirmed, are (4) that no current conflict or repressed wish can lead to a neurosis unless it becomes associated with and reinforces an older repressed wish belonging to an infantile conflict that has never been resolved. It is pointed out that there are many ways in which this association can become established because of the extensive series of re-adaptations that the ego-ideal has to make on being brought into immediate contact with the facts of war (cruelty, &c.). (5) That the earlier repressed wish is of a sexual nature. Where the war shock is the predominant factor in evoking the neurosis it is to be expected that earlier ones are of less importance and less in evidence unless sought for. In the special case, however, of war dread (technically "anxiety") the suggestion is made that just as this symptom in peace neuroses is invariably a discharge of repressed "sexual hunger," so in the dread of real danger it emanates from the narcissistic component of this instinct (self-love) which is attached to the ego. Dread is thus always a morbid phenomenon, and is to be distinguished from the useful defensive reactions (preparedness, with flight or fight) of the biological fear instinct.

SOCIÉTÉ DE BIOLOGIE, PARIS.

THE following is a summary of the papers read at a meeting of this society on March 23rd, 1918:—

CH. RICHET.—Mechanism of Death from Hæmorrhage.

Chez un chien ayant perdu beaucoup de sang, à peu près 4 per cent. du poids du corps, la respiration est modifiée profondément par la position de la tête. Si on lui met la tête en bas, l'animal respire régulièrement: qu'on lui relève la tête, immédiatement la forme de la respiration devient asphyxique, profonde, angoissée. La mort par hémorragie c'est la mort par anémie cérébrale.

H. PIERON.—Tendon Reflexes and Muscle Tone.

H. P. montre que dans leurs recents travaux, sur le tonus musculaire, Sherrington d'une part, et Langelaan de l'autre, admettent pour le reflexe rotulien une dualité clonico-tonique de la réponse musculaire, telle qu'il l'a mis en évidence dans ses propres recherches. C'est seulement par sa phase tonique, qui peut faire défaut, qu'un reflexe tendineux relève du mécanisme général du tonus. Mais le tonus dont il s'agit alors n'est pas le tonus résiduel sympathique (tonus plastique de Langelaan) mais le tonus variable de l'appareil cérébello-médullaire (tonus postural de Sherrington, tonus contractile de Langelaan).

J. HAUTEFEUILLE and E. SOULIE.—Rapid Demonstration of Streptococci by Culture in Blood Broth.

Solxante sécretions de plaies de guerre ont été ensemencées en bouillon sang. Dans 22 cas à streptocoque, l'hémolyse fut 17 fois positive et 5 fois négative. Dans 43 cas sans streptocoque (staphylo, coli, Friedländer, proteus) elle fut négative. Le streptocoque est le seul germe qui hémolyse rapidement en 5 ou 6 heures par ensemencement direct en bouillon sang, les autres germes n'hémolysent qu'en vieillissant.

J. CHAUSSIN.—Pathogeny of Gout.

J. JACOBSON.—Blood Picture in Experimental Tuberculosis.

CH. MATTEI.—Tests for Emetine in the Urine.

La quantité d'émétine éliminée est appréciée en comparant le trouble ou le précipité obtenu avec une certaine quantité déterminée de certains réactifs généraux des alcaloides (Dragendorff, Bouchardat, Tanret, Mayer-Valser) dans 5 c.cm. de la solution contenant l'émétine extraite de l'urine, au trouble obtenu ou au précipité obtenu simultánément par la même dose de réactif dans des tubes contenant en solution dans 5 c.cm. d'eau chlorhydrique des quantités connues de chlorhydrate d'émétine.

ROSENTHAL.—Intraspinal Lavage with Citrate of Soda.

On ponctionne avec une forte aiguille à l'intérieur de laquelle on introdult une aiguille plus fine; cette dernière sert à injecter une solution isotonique de chlorure et de citrate de sodium qui ressort par la grosse aiguille. L'auteur estime pouvoir ainsi débarrasser l'espace sous-duremérien des fausses membranes.

Reviews and Notices of Books.

Poliomyelitis in all its Aspects. By JOHN RUHRÄH, M.D., Professor of Pædiatrics in the University of Maryland Medical School; and ERWIN E. MAYER, M.D., Senior Resident Physician at the Mercy Hospital, Maryland. Philadelphia and New York: Lea and Febiger. 1917. Pp. 297. Price $3.25.

IN the preface to this volume the authors state that they have endeavoured to collect the facts concerning the disease as far as they are known at the present time and have attempted to gather together in one volume the information which they themselves wanted on the subject. In the task which they set before them they have succeeded admirably, and although many monographs have recently been written on this subject, yet few have considered every aspect of the disease so completely.

The first chapter gives a good historical review and interesting quotations from the earliest writers which will be new to many. A reproduction of the illustrations of Heine's work published in 1840 forms part of this chapter and shows what a wide knowledge of the disease was possessed by that author. Two short chapters follow giving the essential details of the pathology of the disease and nature of the virus. The authors adopt the classification of the various types of the disease suggested by the New York Health Department, but they find it necessary for the purpose of description to divide the fourth group of that classification into sub-headings, bringing their classification closely into line with that of Wickman, which is generally recognised as the most convenient. The chapter on the forms of paralysis, deformities, and dislocations is well illustrated by a series of reproductions of photographs. In the chapters on treatment the authors give the details of the serum treatment, concluding thus:—

"From the evidence at hand we do not believe that the immune serum as used at present will be found to be of any value in the partly paralysed cases. For the pre-paralytic cases the results seem more encouraging, but until larger series of treated and untreated cases are compared, it is impossible to say more at this time."

Orthopædic and operative treatment are shortly dealt with and are followed by a full and excellent chapter on the examination of muscles and muscle training which is again fully illustrated. The book concludes with details of incubation, quarantine, and disinfection of patient and surroundings, and a list of epidemics prior to 1911. There is a good index. The authors are to be congratulated on having produced a concise and complete account of a subject on which during the last ten years a large amount of valuable information and a considerable literature has been collected. A word of commendation is due to the publishers for the excellent type and clearness of the illustrations.

Diabetes: its Causation and Treatment (with Special Reference to India). By ERNEST E. WATERS, M.D. Edin., M.R.C.P. Lond., Lieutenant-Colonel, I.M.S.; Civil Surgeon, Howrah, Bengal. Calcutta: Thacker, Spink, and Co. 1917. Pp. 170. Price 4*s.*

IN this small book of 170 pages Lieutenant-Colonel Waters deals with diabetes from the position of a practitioner in the East, and particularly from an Indian standpoint. Little stress is laid on the theoretical aspects of the disorder or on elaborate chemical investigations. The author devotes his attention chiefly to dietetic treatment, which, he points out, has been revolutionised by the new conception of the disease advanced by Allen, much to the advantage of the Indian vegetarian patient. The diet plan he follows is largely that described by Cammidge and Leyton in this country, modified to suit Indian conditions. His experience has been that treatment on such lines, unlike those previously followed, can be successfully carried out in an ordinary district hospital, and that reasonably intelligent patients can be taught to keep themselves sugar-free by means of it. The book will no doubt be welcomed as a simple and useful guide to the treatment of diabetes by those called upon to practise in the East, although it is marred by several loose statements and misprints, notably on p. 163, where milk is said to contain lævulose.

The Law of the Heart. Linacre Lecture delivered by Professor E. H. STARLING, F.R.S., May, 1916. London: Longmans, Green, and Co. Pp. 37. Price 1*s.* 6*d.*

THE Linacre Lecture, delivered by Professor E. H. Starling in 1915, has recently been published as a pamphlet. It embodies the main results of the researches on the heart which he and his colleagues have carried out during the last few years. Employing the now well-known heart-lung preparation, the influence of arterial and venous pressure, of temperature, and of blood-supply upon the output and efficiency of the heart have gradually been worked out. The investigation has led to several fundamental and far-reaching conclusions of which, perhaps, the most important is that which gives its title to the lecture—namely, the law of the heart. This law states that the force with which the heart contracts during systole is directly proportional to the length of its muscle fibres at the end of the preceding diastole. It is in virtue of this law that the heart is able on the one hand to increase its output as the venous inflow becomes larger, and on the other hand to maintain its output in the face of a raised arterial pressure. Upon this law indeed largely depends the power of the heart to adjust itself to the varying demands made upon the circulatory system in the activities of daily life, and it makes clear for the first time the nature of the so-called "reserve" power of the heart. Since the force with which the heart contracts is determined by the length of its fibres at the beginning of systole, it is clear that the heart must dilate in order either to maintain its output against a raised arterial pressure or to increase its output as the venous inflow increases; this dilatation is a purely physiological process provided the nutritive condition of the heart is normal. Although the lecturer does not enter fully into this aspect of the question, there is no doubt that the law of the heart is of the utmost value in elucidating the behaviour of the heart under pathological conditions, and for this reason a knowledge of the principles which Professor Starling has described in his lecture is of great importance to the clinician.

1. *Practical Chemistry for Medical Students.* By ALEXANDER CHARLES CUMMING, D.Sc. With Preface by Professor JAMES WALKER. Second edition. Edinburgh: James Thin. 1917. Pp. 165.
2. *Chemistry for Beginners and Schoolboys.* By C. T. KINGZETT, F.I.C., F.C.S. Second edition. London: Baillière, Tindall, and Cox. 1918. Pp. 150. Price 2*s.* 6*d.* net.

1. THIS book presents a useful series of laboratory exercises adapted to the requirements of the medical student. The exercises seem well chosen in this connexion, and references are made under the salts described to pharmacopœial preparations containing them. In the organic section new material is added in this second edition in the shape of experiments with bread, potatoes, and fats, while experiments on the fermentation of sugar by yeast, and the action of saliva on starch, form a useful opening to physiological laboratory work. This section might have been extended with advantage, so as to have included other enzymes as diastase, pepsin, lipase, and so forth. The book provides a simple course of practical chemistry, and makes no claim to be exhaustive. The reader should readily understand the principles underlying qualitative, and to some extent quantitative, analysis within the limits described.

2. With the object of awakening a general interest in chemical matters, and particularly in the application of the science in industries, this little book has been written. Further than that, the principles appear in such simple terms as should be well within the reach of boys and girls of 14 years and upwards of age of average intellectual capacity. In short, the chapters when intelligently read should carry home easily the conviction how vital is chemical knowledge to industrial success. That is substantially the aim of the author, and he has met with some success, since the first edition was soon exhausted and a demand for a second one was forthcoming in a few months. He deals with the chemical things that matter, and puts clearly the facts upon which the success of many great and important industries depends.

A MEDICAL MAGISTRATE.—Mr. Sidney Philip Matthews, M.R.C.S., L.R.C.P., of Crawley, has been placed on the commission of the peace for West Sussex.

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Vide THE LANCET, Jan. 19th, 1918, pp. 99 and 109.

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LONDON: SATURDAY, APRIL 20, 1918.

The Proposed Ministry of Health.

AT the Royal Society of Medicine on Monday last an interesting discussion was held upon the future of the medical profession under a Ministry of Health. The discussion was opened by Surgeon-Major J. F. GORDON DILL, senior physician to the Sussex County Hospital, who in an eloquent and suggestive paper faced many of the difficulties which all of us feel will arise in the vast process of reconstruction necessitated by any such measure. We publish Major DILL'S paper in the report of the debate which will be found on p. 570, and it will be seen that his views proved the origin of valuable contributions from other speakers competent by position and experience to guide their colleagues. Sir ARTHUR NEWSHOLME, Principal Medical Officer of the Local Government Board, made a valuable speech in spite of the limitations imposed upon him by his official position when dealing with such a subject; whilst Sir BERTRAND DAWSON drew a stimulating if Utopian picture of the medical service of the country as it should be if all medical practice could be grouped round a hospital, which was itself supported by properly equipped centres for clinical, preventive, and scientific work. One thing he frankly thought that medical service in this country should not be, and that is a branch of the Civil Service. This view was challenged by Professor BENJAMIN MOORE, who considered that all the freedom of purpose and all the high ideals ever postulated for the medical life could be realised as well under a State Service of Medicine as in any other way—a statement which has much to recommend it, but how much cannot be said in the absence of any exact definition of what is meant by "a State Service." Sir BERTRAND DAWSON, for example, showed himself willing to accept a large measure of State help, though being uncompromisingly hostile to a complete measure of State service. One of the reasons why such a debate as that held last Monday must be useful is that it will compel all men to state what they really imply by the terms which they use, with the result that not infrequently it will appear that differences in nomenclature do not mean differences in design.

Major DILL'S scheme is for the establishment of a State Service of Medicine, alongside of which there would run complete opportunities for private practice, with some openings for personal initiative and for success in accordance with special characteristics, or with the display of individual talents. And his scheme will especially commend itself to all who have experience in the conduct of medico-political affairs because of his insistence on the detailed work of any new medical bureau being discharged by medical men where medical details touch the life of the people. He postulates the creation of an entirely new Government Department, with a Cabinet Minister at its head, and in this respect joins issue with many who have taken great thought on the whole subject. That unification of the medical service of the country is necessary all allow, but gradually, we believe, most who have pondered a really complicated question, and who have practical knowledge of more than one side, have come to the conclusion that the unification should not at once assume the perilous form of a new Government Department, but should, at any rate for the present, take place under the Local Government Board. Of the six State Departments which at present discharge duties in connexion with the national health the Local Government Board, having the sanitary administration of the country under its control, is the department most able to take over the mass of the duties of the other five. It is, indeed, the only department which could form a real centre, able to organise and stimulate the energies of affiliated branches of work. It is true that the National Insurance Commission, having for its charge the care and sickness of some 14 million subscribers, must play an enormous part through the Panel officers in the promotion of the national health, but there is between this bureau and the Local Government Board but little overlapping or disputed territory. The Insurance Commission could not without complete reorganisation take over the medical functions of the Local Government Board, but a junction could take place between the two Government departments without dislocation of business. Failing the creation of a new department, which, like Major DILL, we might prefer, but which at the moment can hardly be looked for, we think the cause of medicine, and therefore the welfare of the people, would be best served by constituting the Local Government Board the central authority for the national health. This view, in much the same words, has been expressed in our columns several times since the creation of a Ministry of Public Health became an imminent legislative matter, and to a great extent contributions to the question published in our columns have supported the same view.

Major DILL, in his proposal for a scheme of administration upon which the medical attendance of the population could be best provided for, has drawn out a pattern in which to some extent just such a fusion as we suggest is pictured. His Administrator-General might well be an adjutant of the President of the Local Government Board, with National Administrators for national health purposes doing their work through Provincial and County Inspectors and Directors responsible to their superiors for increasingly subdivided work. The executive of the great subdivisions would consist of the staffs of general and special hospitals, serving as consultants in medicine and surgery, as pathologists and bacteriologists, and, on the preventive side, of district medical officers representing the present whole-time medical officers of health.

The scheme as he has laid it down would give scope for the centralisation around county hospitals as a focus, which Sir BERTRAND DAWSON regards as the direction in which clinical medicine should develop, while the existing organisation of the British Medical Association would be valuable in the working, and in the Medical Research Committee we have already a central scientific bureau.

A Balanced Diet.

THE requirements of bodily nutrition have received continuous attention from experts for many months past, but it remains a fact that our knowledge of the essentials of a balanced diet is still fragmentary. We are reminded of this forcibly by a perusal of a document[1] issued last week by the Medical Research Committee on the composition of dietaries, with special reference to the needs of munition workers. When food shortage became a serious reality physiologists found themselves able to state with some exactitude the amount of energy consumed in this or that kind of productive work, but they had little or no knowledge to guide them in assessing the adaptability of the human machine. Its demands and its possibilities had been laboriously studied under conditions which circumstances had led us to consider as normal, but exactly how far the machine was capable of being adjusted to other, and presumably less favourable, conditions remained a matter of conjecture. The determination of the proportion of the various ingredients of a diet, and the number of calories needed under various assigned conditions of life, form the main text of the document before us, which is specially valuable in pointing out how far the statistical results are consistent on the one hand with an adequate provision of energy, and on the other with due observance of economy in face of a world shortage.

The inquiry has been made by Captain M. GREENWOOD and Lord DUNLUCE, both attached to the Welfare and Health Section of the Ministry of Munitions, and many of the conclusions are based on data collected during the spring and summer of 1917 in hostels and canteens serving the munition workers in various factories. These data appeared in a previous report prepared by Dr. LEONARD HILL, in collaboration with Captain M. GREENWOOD, R.A.M.C., which was dealt with in our columns of Dec. 1st, 1917. The most significant observation emerging from the new inquiry is to the effect that reasons appear in favour of allowing carbohydrates to bear the brunt of the struggle to provide energy for work, and that there are good grounds for advising the extended use of potatoes. Both our physiological inclinations and economic necessity (the latter taking the form of a heavy potato crop and a dearth of fats) point, they remark, to a radical reduction of fat and increase of carbohydrates in the dietary. The present provision of so many calories from fat and meat as could be made six months ago being no longer feasible, it is reassuring to learn that the substitution of energy derived from potatoes and cereals for a large proportion of that yielded by fats and animal proteins cannot scientifically be condemned. The report puts the matter thus:—

"We do not mean that it would not involve hardship. That a diet such as shown in the 1917 returns is more appetising and, *in popular belief*—which counts for much—more "strengthening" are propositions we are in no way concerned to deny. But we can find no evidence that these predilections are rooted in any functional or structural property of the human organism. In this matter of opinion we think that social habit—the desire of the less wealthy to imitate the customs of the more wealthy, has greater weight than physiological demands. This is the real case for rigorous economy and simplicity of diet among the wealthy. Such economy does not sensibly increase the available supply of food for hard workers, but it sets a conspicuous and good example."

The correct balance of the diet is the factor on which ever increasing emphasis should be laid. In the case of bread much has already been done to achieve this balance within the loaf itself. Professor GRAHAM LUSK, of Cornell University, whose work on dietetic balance has already borne good fruit, reminds us in his recently published booklet[2] on "Food in War Time," to what an extent a working diet is capable of modification. The peasants of Southern Italy live mainly on maize-meal, olive oil, and green-stuffs, and have done so for generations. Maize is to them the cheapest of all cereals, olive oil cheaper by far than animal fat. These two materials consumed alone would, he says, bring disaster upon the human race, but, if taken with the addition of cabbage or beet-tops, they become capable of maintaining mankind from generation to generation. In view of a diet such as this, which with all its simplicity and economy is yet a balanced diet, there may well be for us all a further margin of readjustment without hardship.

Natural Science and Education.

THE report of the Committee appointed by the Prime Minister in August, 1916, to inquire into the position occupied by natural science in the educational system of Great Britain has been issued (Cd. 9011). The recommendations are of the utmost importance, but for the present we may say that the broad conclusion is that "concerted efforts should be made by employers, teachers, local education authorities, and the State to increase the flow of capable students to the universities and higher technical institutions with a view to securing the larger supply of trained scientific workers for industrial and other purposes." In regard to medical education, the Committee considers that the First School Examination, the requirements of which are defined, should be recognised by the General Medical Council as qualifying for entrance into the medical profession. It is further recommended that students should be allowed to take the First Professional Examination in (*a*) chemistry and physics, and (*b*) biology, before entering a university or medical school, and that more scholarships should be provided for both sexes, tenable throughout the medical course.

[1] National Health Insurance. Medical Research Committee. An Inquiry into the Composition of Dietaries, with Special Reference to the Dietaries of Munition Workers. His Majesty's Stationery Office.

[2] W. B. Saunders Company. 1918. Price 2*s*. 6*d*.

Annotations.

"Ne quid nimis."

AN INSTRUCTIVE CASE FOR LIFE ASSURANCE COMPANIES.

THE action of Yorke *v.* The Yorkshire Insurance Company, Limited, the first trial of which ended in the jury disagreeing, has now been concluded before Mr. Justice McCardie, who, on April 10th, delivered a considered judgment upon answers to a series of questions submitted to the second jury. The case has already been referred to in THE LANCET[1] in connexion with the general question of the privilege of medical witnesses, who take part in the obtaining of insurance policies, if doubts arise afterwards as to the health of the person insured at the time of his proposal. In the case under comment the questions upon this subject were answered by the jury in favour of the claimant under the policy, and the replies given were such as to negative all suggestion that any statement or omission on the part of any medical man had assisted in the obtaining of a policy which otherwise would not have been granted. There was, however, another question which Mr. Justice McCardie treated as being of vital importance and which should be noted. Mr. Smith, the deceased, had been asked when he proposed himself for insurance, "What illnesses have you suffered?" and had failed to call attention to an occasion in 1911 when his health had broken down and when, in November of that year, he took an overdose of veronal, with results so serious that his relatives were sent for. Having heard the evidence as to this the jury when asked, "Had Smith suffered from any illness of consequence before Dec. 12th, 1916?" answered in the affirmative, and the learned judge considered that they were justified in their reply. He observed that the word "illness" had not been judicially defined, but that the jury had clearly accepted the occasion, when through an overdose of veronal Smith lay in a critical condition, as one of serious illness within the meaning of the insurance company's question. The result was that "the warranty of truth was broken, the policy became void, and judgment must be entered for the defendants." With regard to other questions answered by Smith when taking out the policy, his lordship held that they must receive such an interpretation as would be put upon them by ordinary men of intelligence and knowledge of the world, and he held that such an inquiry as "Are you now, and have you always been, of sober and temperate habits?" must be taken to refer only to the use and abuse of alcohol and not to the use of veronal or other drugs. It will be remembered by those who read the evidence that Smith died from an overdose of veronal within three months from the date of the policy, and that at the trial the question how far a person might be "in the habit of taking veronal" without being properly called an "habitual user" of the drug, or a victim of the "veronal habit," was made prominent. As to this point the question left to the jury was whether the deceased had "been in the habit of taking veronal," to which the reply was given: "Occasionally, but there was not sufficient evidence of a habit." The meaning of this is perfectly clear. The jury accepted that which medical witnesses had maintained—that a man may rightly be said to be "in the habit" of dosing himself with a drug, who makes use of it when, in the words of a celebrated character in fiction, he "feels disposed," or fancies that he requires it. This employment of the word "habit" does not, however, necessarily imply any addiction to the drug such as occurs in the case of some drugs to which their users become slaves. The distinction no doubt is a nice one, and our language does not appear to possess any forms of colloquial speech which would enable their user to convey his meaning without the possibility of being misinterpreted. Probably the case of Yorke *v.* The Yorkshire Insurance Company will have as its result the insertion of distinct questions in proposal forms as to whether the person proposed has suffered from insomnia and whether to prevent it, or for any cause, he has taken, or is wont to take, any drug of a soporific or narcotic character; and it may be suggested, in view of the matters referred to above, that if the word "habit" or "habitual" is introduced in such a connexion it should be carefully and intelligibly defined. The propounding of a definite question relating to a subject which, no doubt, is of importance to insurance companies will be fairer to the proposed person and to his medical advisers than reliance upon the rule of law referred to by Mr. Justice McCardie, which requires the disclosure of "all material facts" such as might lead to a refusal to insure or to the requiring of a higher premium.

[1] THE LANCET, March 16th, 1918, p. 412.

ANTITETANUS SERUM, CLINICAL AND EXPERIMENTAL.

WE have received from Surgeon-General Sir David Bruce a sixth analysis of 100 cases of tetanus treated in home military hospitals, covering the period from March to June of last year. The mortality of these cases was 29 per cent. and the incubation period 44 days, being practically the same as the average for the previous 400, and a consideration of this fact leads Sir David Bruce to remark that little more can be expected from the use of prophylactic and therapeutic antitetanic serum; it is now, he says, up to the surgeon to do the rest. He reminds surgeons again that when operations are performed at the site of wounds, even if these are already healed, a prophylactic injection should always be given. In regard to the route of administration in acute general tetanus the Tetanus Committee were of opinion that the intrathecal route afforded the greatest chance of recovery, and Sir David Bruce contrasts this advice, coinciding as it does with experimental evidence, with the increasing popularity among surgeons of the intramuscular route. It appears, however, that the work of the bacteriologist is not yet to be regarded as complete, for the results are just to hand in the *Journal of the Royal Army Medical Corps* of an elaborate inquiry into wound infections in cases of tetanus by Captain W. J. Tulloch, R.A.M.C., based on work done at the laboratories of the Royal Army Medical College and the Lister Institute of Preventive Medicine. The main object of the inquiry was to determine whether the tetanus bacillus can fairly be regarded as an individual organism, or whether there is a group of allied bacilli any of which may give rise to spasm-producing substance, toxic for man and animals. Preliminary investigations led to the discovery of a selective culture-medium adapted to the enrichment of *B. tetani* against the other organisms frequently accompanying it, and incidentally to

the part played by symbiosis in the pathogeny of anaerobic infection. The preparation of this important medium is described thus :—

Take 1 lb. of chopped meat, add 1 litre of water, boil 30 minutes, cool to 45° C., adjust reaction of fluid so that it is slightly alkaline to litmus. Trypsinise as for Douglas's broth; incubate in open vessel for five days at 37° C. Filter products of putrefaction through paper, add sodium formate 1 per cent. of total, adjust reaction of fluid to neutral point for phenolphthalein. Fluid is then filtered through a Berkefeld and Doulton filter in series, stored under paraffin in sterile flask mounted with a hooded delivery pipette, so that medium may be distributed into tubes. Before use each tube of 10 c.cm. is enriched by addition of 1/8 part of fresh rabbit kidney, removed (after killing animal) by sterile operation. Author usually employs tubes containing 5 c.cm. of medium and adds 1/16 part of kidney to each. To ensure sterility, 5, 1, 0·5, 0·1, and 0·01 c.cm. are inoculated into meat tubes which are incubated anaerobically for 14 days and should show no evidence of growth.

The conclusions which Captain Tulloch with proper reserve allows himself to make are: The frequent presence in the wound exudates of tetanus patients of non-pathogenic bacilli liable to be mistaken for the true tetanus bacillus; their presence indicates a condition of the wound in which the tetanus bacillus, if it gains access, grows readily. He has satisfied himself further that there are at least three serological types of the *B. tetani* itself, and that in cases of tetanus among the wounded in this country the causative bacilli do not correspond serologically with the type commonly employed at the present time for the preparation of antitoxin. There appears, therefore, to be further work for the bacteriologist.

THE HISTO-PHYSIOLOGY OF NERVE REPAIR.

IN spite of the most adverse circumstances the spirit of scientific research that animated certain small yet active and productive medical schools in Belgium in happier days has not deserted our dispossessed confrères, and it is no less gratifying than stimulating to learn of further contributions emanating from establishments that can scarcely be other than makeshift. Thus, at La Panne sporadic bombardments have not quenched the flame, as witness the volume of "Travaux de l'Ambulance de l'Océan" there situated. In the latest fasciculus to be issued[1] is a long communication from Professor A. P. Dustin, of the University of Brussels, on the histo-pathology and histo-physiology of nerve injury and nerve repair, a matter which is very much to the fore in these times. Professor Dustin furnishes a remarkably complete account of the microscopical changes in the central and peripheral segments of injured nerves, based on the examination of cases varying from a few days or less to a couple of years or more in duration. A painstaking description is given of fibrillation of the axones, the spirals of Ranvier-Perroncito, the irritative and regenerative phenomena in the syncytium of Schwann, the reactions in vascular and connective tissues, all of which are illustrated by beautifully clear drawings. In a subsequent section attention is directed to the difficult question of the mechanism of nerve regeneration and the interpretation of the microscopical picture. Here, we venture to think, Professor Dustin scarcely does justice to the arguments of the peripheral school, as one may say, who hold that regeneration in the isolated peripheral section of a cut nerve is a histological fact. He has not, apparently, had a chance of referring to the work of the late Dr. Alexander Bruce on multiple neuromata of the central nervous system, by which study the possibility of peripheral regeneration is materially strengthened. For that matter, Professor Dustin's fine research work seems to have been devoted disproportionately to the changes in the central ends of injured nerve-trunks. Be this as it may, one of the more convincing sections of the paper is concerned with the orientation of the regenerating axones across the cicatrix to the peripheral end according to the principle of what he terms odogenesis, in opposition to the more commonly accepted view of neurotropism. Cajal supposes, in the case of the latter, that substances are actively secreted by the proliferation of the cells of the sheath of Schwann, which substances exercise a chemiotropic action on young axones and so orient them into the appropriate channels. Nageotte has raised the serious objection that if this were the case young developing axones would never leave the central ends of the sheaths in which they already find themselves. By odogenesis is meant the process whereby young axones follow paths formed by embryonic connective tissue cells and by the cells of the sheath of Schwann; through interstices thus made the axones penetrate to the peripheral end. The last section is assigned to a consideration of many practical points dealing with the technique of operative interference.

[1] Paris: Masson et Cie, December, 1917.

A QUEST FOR SUPPLEMENTARY FOODS.

THE interesting announcement is made that the Council of the Royal Society has appointed a committee to investigate and report on the possibility of replacing food materials and other necessaries by the utilisation of natural products not hitherto generally employed for such purposes. Careful and systematic prospecting in this direction is practically certain to add to our food resources, and the terms of reference will be widely interpreted, covering, we anticipate, the many edible plants at present not in common use and many so-called waste products in manufacture. The possibility of putting synthetic processes into service will be considered, it may be taken for granted, in any quest for supplementary foods. There are also sources of food-supply in this country which sentiment has ruled out of the national dietary, although these products are esteemed elsewhere. Such are the snail and the frog. Again, the edible fish might be made to include whaleflesh, dogfish, and common fresh-water fishes, none of which have any popularity in this country, so that there is no attempt to get and maintain any supply. In some rural communities—in parts of Norfolk, for example—fresh-water fish are largely eaten. The chemical transformation of inedible substances into edible ones may some day be economically realised, and in this direction many chemical experiments might well be made, some of which would probably have fruitful results. The turning of wood and fibrous materials, the bulk of which is cellulose, into sugar can be experimentally accomplished now, and the committee will no doubt have their attention called to the possibilities of hydrolysis in regard to food production in general. Altogether the inquiry should prove a most interesting one, and the results may likely enough indicate new industries to deal with new materials in supplement of our present common stock of food. We understand that suggestions as to such products and the means of organising their collection will receive consideration if addressed to the secretary of the Natural Products Committee, Royal Society, Burlington House, Piccadilly, London, W. 1.

THE HISTORY OF X RAYS.

IN the first Silvanus Thompson Memorial Lecture, delivered before the Röntgen Society on April 9th, Professor Sir Ernest Rutherford dealt with the advances in our knowledge of the constitution of matter resulting from the discovery of X rays in 1895. Their discovery, he said, marked the commencement of a new epoch in physical science, for in the attempts which were immediately made to ascertain the nature of the unknown radiation attention was directed to the study of radiation in general, and new phenomena were soon encountered. A general investigation of the cathode rays and of the nature of the discharge of electricity through gases led to the discovery of the electron and to the putting forward of the ionisation theory by Sir J. J. Thomson. Townsend followed with his theory of ionisation by collision, and O. W. Richardson investigated the emission of ions from incandescent solids. All this work, at first solely of academic interest, has come to possess immense practical value. The production of detecters and amplifiers for wireless telegraphy, the electrical rectifiers and oscillators by which radiotelephony across the Atlantic is now possible, and the Coolidge X ray tube, which is destined to play an important part in radiology and in pure science, are some of the first-fruits of the new harvest. From the outset X rays and the phenomena of phosphorescence were generally thought to be connected, and it was while in search of invisible or X radiations from certain phosphorescent salts that Becquerel discovered the radio-activity of uranium compounds. The Curies' brilliant researches then resulted in the isolation of the radio-active elements, polonium and radium. Other radio-active elements were brought to light, and the ensuing chaos of thought lasted until the introduction of the transformation theory by Professor Rutherford himself. Soon after some of the difficulties of classification were solved by Soddy, whose conception of the isotope served to explain the constitution of substances whose atomic weights may differ slightly, but which cannot be separated by chemical means. Curiously enough the study of X rays themselves had no striking advance to record for many years until Barkla obtained evidence of the existence of characteristic radiations from experiments on secondary X rays. His discovery led to the wave theory of X rays, which was completely substantiated at later dates by the diffraction experiments of Laue, the Braggs, Moseley, and Darwin. Barkla's characteristic rays were shown to be of the same nature as the rays yielding bright line spectra. The diffraction experiments led to the employment of the X rays in two further classes of investigation. In the hands of Professor Bragg and his son problems of crystal structure were successfully attacked, while the late Mr. Moseley found in them a powerful method of investigating the constitution of the elements. Moseley showed that the critical property of an element was its atomic number—i.e., the number of the element in the periodic system—while its atomic weight was relatively of secondary importance. The lecturer added that this important relationship between the frequency of the K or L series of rays and the atomic number of the element ought in fairness to be called Moseley's law. At the conclusion of his address Sir Ernest Rutherford received from the President, Captain G. W. C. Kaye, the first of the medals awarded annually to commemorate the lecture.

THE CAPITATION BASIS OF PANEL PRACTICE.

IT is generally admitted that a reconsideration of the capitation fee payable by the Insurance Commissioners on account of medical benefit is justified by the unforeseen alteration of conditions which has taken place since the amount of the fee was fixed. Chief of these altered conditions are the diminished value of money, increase in the cost of carrying on the duties of panel practice, and a disproportionate increase in the liabilities imposed on panel practitioners. The demand made last year by the Conference of Local Medical and Panel Committees was rebutted by Sir Edwin Cornwall in a letter containing the passage—

> The case appears to be put forward on the theory that inasmuch as insurance practitioners are paid in part out of the Exchequer any shrinkage in the value of their remuneration due to the present national emergency should be made good to all of them by the State as between employer and employed, and that their remuneration should thus be maintained effectively at the pre-war level.

Whilst protesting against the tenour of this reply, the Conference of Local Medical and Panel Committees, which met again in London last week, decided almost without dissent, in view of the difficult position of national affairs, and having no desire to embarrass the Government, not to press the claim for an increase in capitation fee at the present moment. No doubt was felt by the conference that the claim was a just one, and the Lancashire representatives especially were confident that it would be admitted if pressed. The general feeling was, however, that such pressure, even if not unpatriotic, would be construed as such by others than the Chancellor of the Exchequer. The Insurance Acts Committee was instructed to press for an additional grant to cover increased travelling expenses, rural practitioners in particular being asked to furnish information for calculating this grant on an equitable basis. In the case of panel practitioners whose net professional income from all sources is within the limit observed by the Government in dealing with civil servants, a grant in respect of increased cost of living is to be applied for. The conference is to be congratulated on the large measure of unanimity which attended the decision on these important and highly controversial matters.

THE LATE MR. GUY ELLISTON.

WE much regret to announce the death, on Saturday last, from pneumonia complicated with nephritis, of Mr. Guy Elliston, financial secretary and business manager of the British Medical Association. He was the third son of the late Dr. W. A. Elliston, J.P., of Ipswich, and was born in 1872. He was educated at Ipswich Grammar School, and received his business training in a big steamship company and on the managerial side of several well-known journals. In 1898 he became assistant secretary of the British Medical Association, and in 1902 succeeded the late Mr. Francis Fowke as general secretary. His work for the Association never flagged and will long be remembered by those who collaborated with him in 20 years of strenuous labour. His zeal won for him among the members many friends who appreciated his qualities as a man and valued his intimate knowledge of the business side of professional life. The Medical Insurance Agency, formed by the *British Medical Journal* and *The Lancet*, owes much of its success to the careful organisation of Mr. Elliston as its secretary and agent; and the distribution of nearly £3500 of its surplus profits amongst medical charities, coupled with the sum of £6500 received

by the insured medical men as direct benefit, are tributes to the sound judgment of the secretary's methods as well as to the value of the Agency. In his early manhood he took much interest in the Artillery Volunteers, retiring with the rank of senior captain in 1897. Three of his brothers are now serving with the armies abroad, and he received the probability of joining up in response to the latest conscription Bill with the perfect readiness of one who had been trained for such a contingency. Mr. Elliston, who was buried at Ipswich Cemetery on Wednesday last, leaves a widow and four daughters, to whom we extend our sincere sympathy.

BOTULISM.

CASES of food poisoning have a special interest at the present time, when the national needs demand the utilisation of all possible food materials and entail the use of preserved, cured, or tinned foods to a greater degree than under normal circumstances. We publish in this week's issue of THE LANCET two important papers to which it is our duty to draw the attention of our readers. The first of these, by Captain Wilfred Harris, deals with seven cases of botulism which have come under his notice within a fortnight in widely separated districts of the metropolis. He gives an admirable brief summary of the principal clinical features of the condition, as published by Durham in the *Clinical Journal* of June 7th, 1899, adding a clear and instructive account of the most typical case in his own series. The second paper, by Major A. J. Hall, of Sheffield, deals with 11 cases characterised by asthenia, ophthalmoplegia, and paralysis of various cranial nerves, occurring in Sheffield and other places in the neighbourhood. There can be little doubt from the description he gives that these cases are also examples of botulism as suggested by him, though he has not yet had the complete opportunity of establishing their nature. Botulism, allantiasis, or acute infective ophthalmoplegia, is a form of food poisoning believed to be due to infection by the *Bacillus botulinus*, and first described by van Ermengem. Although its name suggests poisoning by sausage meat, the bacillus has been found in ham, tinned fish, lobsters, oysters, and cheese. Unlike some other forms of food poisoning due to bacterial agency, botulism is not associated with gastro enteritis; indeed, obstinate constipation is usually a prominent feature in cases of this condition. Its marked tendency to cause severe nervous symptoms, and the fact that it is often afebrile, may lead to its true nature being overlooked except in epidemics. Briefly stated, its main symptoms are internal and external ophthalmoplegia, with paralysis of accommodation, dilatation of the pupils, strabismus, ptosis and diplopia, aphonia, dysphagia, and obstinate constipation. Diminished salivary secretion also occurs in many cases. Facial palsy occurred in some of Captain Harris's and Major Hall's patients. Retention of urine was noted in five of those in Captain Harris's series. The disease is a serious one, and may be fatal. The treatment suggested by Captain Harris is to clear the alimentary tract with calomel and enemata, and to give regular hypodermic injections of strychnine. He suggests that the pathological condition produced is an acute polioencephalitis superior, due to the neurotoxic action of the poison produced by the causal organism. We congratulate Captain Harris and Major Hall on their prompt recognition of the cases observed by them, and we hope their interesting papers will draw the attention of medical practitioners and the public health authorities to the importance of recognising this condition and dealing with it.

A Consultative Committee to advise the Ministry of Pensions on all matters relating to orthopædics has been appointed, with Sir Arthur Boscawen, Parliamentary Secretary to the Ministry, as chairman. The members are Colonel Sir Robert Jones, A.M.S., Major W. R. Bristow, R.A.M.C., Major R. C. Elmslie, R.A.M.C., and Sir John Collie and Dr. Fletcher Porter, Director and Deputy Director of Medical Service to the Ministry.

THE Local Government Board has just issued a new Order entitled "The Public Health (Cerebro-spinal Fever) Regulations, 1918," empowering the councils of administrative counties and county boroughs to arrange or provide for: (1) the supply of serum for the treatment of actual or suspected cases of cerebro-spinal fever, together with the necessary apparatus for the use of the serum; and (2) the examination of suspected cases and of "contacts." The considerations which led to the issue of this Order were, firstly, the great mortality that attends outbreaks of cerebro-spinal fever; and, secondly, the favourable reports that have been published in America and elsewhere as to the beneficial results of the prompt use of the serum treatment. In comparison with the other infectious maladies that occur in this country cerebro-spinal fever stands out as one of the most fatal of them all, its case-mortality rate ranging from 50 to 80 per cent. In the serious epidemic which occurred in Belfast during 1907 the fatality rate was 74·9 per cent. and in the equally serious outbreak of the disease at Glasgow in the same year 72 per cent. of those attacked lost their lives. Another reason for issuing the new Order was the fact that hitherto medical practitioners in England and Wales have experienced difficulty in obtaining supplies of the antimeningococcic serum suitable for immediate use when outbreaks of cerebro-spinal fever occurred. This difficulty will now be largely removed by the Order, and we anticipate that as a result of an extended use of the serum the high mortality of the disease will be sensibly reduced.

ROYAL MICROSCOPICAL SOCIETY.—An ordinary meeting of this society was held at 20, Hanover-square, W., on March 20th, Mr. J. E. Barnard, the President, being in the chair.—Lieutenant-Colonel L. W. Harrison, R.A.M.C., dealt briefly with the difference between various spirochætes. In distinguishing *S. pallida* from other varieties the points he laid stress upon were: first, the extreme fineness of the pallida; secondly, its pallidity. If the focus was shifted, even a little, other varieties assumed a rusty hue, whereas the *S. pallida* retained its delicate pallor. *S. perfringens* too, was much more dazzling than *S. pallida*. Hence the illumination which sufficed fairly well for other spirochætes was not enough for *S. pallida*. Another feature was the great flexibility of *S. pallida*, which was very active in a small radius. The only spirochæta which might cause differential difficulty was *S. microdentium*, an organism obtained from the mouth of certain cases. But this had black portions on its body, so that it was naturally demarcated into luminous and dark portions, as against the uniform pallor of *S. pallida*. Also the body was thicker. He recommended examination of material from the syphilitic papule rather than from any other part of the patient, to those who were endeavouring to become familiar with the microscopical appearance of *S. pallida*.

PARIS A "VILLE DE FRONT":
SPECIAL PRECAUTIONS AND MEDICAL PROVISION.

BY A SPECIAL CORRESPONDENT.

THE effects of the sudden irruption of air raids on Paris—and the one last night was attended with the loss of over 20 lives, as has been publicly announced—followed by the bombardment of the city with long-distance cannon, have fallen far below the German hope.

Calmness of the People.

Since the surprise of the first morning, when the shelling was believed to come from the usual range, the population began to follow out official instructions and betook themselves to their cellars upon warning; otherwise the daily life of the Parisians has been but little disturbed. Possibly because the word bombardment has a fear-inspiring sound the impression of danger has been far more vivid everywhere except in Paris itself. It is true that many people left Paris and went to the country during the week preceding Easter Sunday; but it must be remembered that the normal number of travellers at Easter holiday time is always great. When the number of those who wished to remove their children from the sound of the shells, and of aged persons whose nerves were shaky, and of idle neutrals, was added to the normal exodus, it is probable that the remainder of timid people whom the long-distance cannon alone had put to flight was remarkably small. Many of the latter have already returned to Paris, reassured by the general atmosphere of calm. The difficulty of coping with the necessary sudden shifting of the supply of food for travellers may have had something to do with these sage returns, for the stay-at-home Parisian read with no small satisfaction that in certain cases, where the unexpected influx of people into the environing country had been great, the holiday maker had paid 4.50 francs for a chop and a franc for an egg. People who had left in too great a hurry to provide themselves with the new bread card had to do without bread until they could get their cards by post, as the local mayors were forbidden to supply duplicate cards to visitors. The irregularity of the posts added to this inconvenience, but the fact left the Paris authorities unmoved.

With the exception of the catastrophe on Good Friday, when 75 people were killed and 90 injured, not directly by shells, but by the damage caused to the roof of the church where they were worshipping, the number of casualties has been small. This is due in a great measure to the unusual number of open spaces in Paris, where the street fronts often conceal unsuspected courts and gardens, besides the obvious public squares. The ground on which the shell falls has considerable effect on the amount of damage done. In one fairly crowded street a shell hit the rain-soaked roadway at the edges of the pavement in front of a large café. The building was practically uninjured and there were only one or two slight casualties; but in another instance, where the shell struck on cobble-stones at a much greater distance, the nearest building had all its windows smashed and three passers were killed by splinters. Careful calculations as to the angle at which the shell is bound to fall prove there is comparatively little danger except on the top storeys of houses and at the point of striking in the streets. The Germans probably anticipated that the effect of these cannon would be more political and psychological than military, but in either case the extent of their disappointment may be judged by the tales of panic which they have found it necessary to invent.

Prompt Action of the Authorities.

Proper precautions for the care of the wounded in the hospitals have presented a serious problem. The transport of numbers of these men to the cellars of hospitals during an air raid is not only a difficulty in itself, but has its dangerous side. Inquiries at one of the largest Paris hospitals showed that there, as elsewhere, the patients and staff were singularly unmoved by either raids or bombardment. The noise of a shell from "La grosse Berthe" is the subject of many witticisms in the wards, where the patients speculate on the place and manner of the falling of the projectile with a philosophy undisturbed by the fact that two hospitals have already been hit.

One of the most noticeable things about the way the authorities cope with these calamities is the almost instantaneous fashion in which everything is put to rights within a few minutes after the shell has burst. It is hardly possible to give too much praise to the members of the city fire brigade, who have unerring *flair* for the quick discovery of points where shells have burst. They not only extinguish fires, but transport the killed and wounded, maintain order, and obliterate the traces of damage with incredible speed. One hour after a shell had fallen on a creche, killing mothers and children and wounding 21 people, the firemen, helped by the staff, had removed the dead and wounded, cleared away the rubbish and broken beds and tables, and had swept every trace of the outrage away except the gaping hole and the broken windows.

Precautionary Measures.

The combination of the bombardment and air raids caused the authorities to take prompt precautions to mitigate the danger among the civilian population. Notices were posted on the doors of all schools stating that in the case of air raids the children should be at once taken to safe shelters A good instance of the temper of the people is given by the fact that the schools have all reopened after the Easter holidays. The Vice-Rector of the University of Paris has issued a notice dividing the pupils into three classes—those whose parents wish them to be taken into the cellars of the school during air raids, those who live near the school and are to be sent home alone, and those who are to be called for by their relations. The inevitable lighter note was struck by the appearance in the streets one morning of the police force armed with drums which they were instructed to beat to warn the city of the beginning of a bombardment. One heard a feeble and erratic rumble, evidently made by fingers unused to drum-sticks, at seven o'clock one morning, following the first shell. At that hour few people were abroad, but the "agent's" performance, even when guided by any amount of witty advice, roused such a volley of chaff that it was never repeated. Another order, since rescinded, forbade the performance of matinées in the theatres and cinemas. The management and staffs pointed out that since crowds gathered in churches and restaurants it was unfair to be invidious in a matter where the means of livelihood of many people were concerned. The authorities have given way, and the multi-coloured pillars on the street corners are still covered with the notices of theatrical performances. At night these notices are invisible, for the lighting regulations have become much more stringent. A year ago Paris declared she could reduce her lighting no further, but her late experience has forced her to find the means to despoil herself almost entirely of her quondam title of "*La Ville Lumière.*" Fines for householders in the beginning of the raids were so numerous that the city's coffers must have been well filled; but now one rarely sees a lighted window, and even the blue lights at the entrance to the Nord-Sud stations have been abolished, with the double object of achieving obscurity and announcing to those seeking shelter that the electricity has been cut off, so that they need not fear electrocution if they walk on the tracks. A mushroom-like crop of little white plaster patches in the Paris streets was caused by the order obliging every householder to close up within ten days the ventilating holes of those cellars that are marked as suitable for shelters. Artistic Paris at once painted the too striking plaster with a coat of grey, but many jokes have been made apropos of this order over the traditional Gallic dislike of a "*courant d'air.*"

Arrangements for Refugees.

Paris has yet another reason to feel that she has become a "ville de front," for the arrival of hundreds of refugees from the re-invaded districts has brought the tragedy of the war very close. The arrangements made for the comfort and well-being of these unhappy people have been admirable. With the aim of preventing any sudden agglomeration of them the French authorities have systematically distributed them among the different departments in France. In their distribution of food and clothing and shelter they have been materially helped by the American, British, and Canadian Red Cross societies. The American Red Cross has done a great work in collaboration with existing French organisations to provide for the refugees, many of whom were evacuated for the second time. The military canteens in the Gare du Nord,

both French and English, were utilised for the refugees on the night of their arrival in Paris. They were given a hot meal, and if well enough taken at once to other stations, where they were sent off to different parts of France. Red Cross workers met them at the end of their journey and provided for their comfort as far as possible. The very aged and those who were too ill to proceed were cared for in the canteens, where comfortable beds were installed and a medical service provided. As many of these people were obliged to leave their homes hurriedly without being able to bring away any of their possessions, the societies in aid of the refugees of the different invaded departments are now busily supplying them with clothing.

Paris, April 13th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Parliamentary Representation of Queen's University, Belfast.

Sir William Whitla is one of the two candidates standing for the new University constituency. He is a representative of Ulster on the Irish Convention and his association with the University and College goes back for 40 years. The preponderance of medical graduates on the University Roll makes his return probable.

Tuberculosis in Dublin.

The Tuberculosis Committee for the city of Dublin has recently come to an arrangement with the authorities of St. Vincent's Hospital whereby the extern department of the hospital will undertake the treatment of insured persons in the city who are suffering from tuberculosis. The committee are putting in hand schemes for setting aside funds for sanatorium and hospital treatment, and it is generally hoped that the amount of tuberculosis, which is very prevalent in Dublin, will shortly be much reduced.

Asylum Workers' Association: Down District Asylum Branch.

The Asylum Workers' Association, established in 1895 with the object of the betterment of the condition of nurses and attendants in the asylums (now styled "mental hospitals") in Great Britain and Ireland, and of improving their status in the nursing world, promoted in 1909 the passing of the Asylum Officers' Superannuation Act, thereby securing for all classes of employees definite and assured pensions on a scale proportionate to their length of service. When the principle of Home Rule was adopted for Ireland it was considered expedient that Irish asylum workers should form a division under their own management, and Mr. M. J. Nolan, resident medical superintendent of the Down District Asylum was elected president of the Irish Division. Branches were formed at many of the Irish asylums, and it may be seen from a report recently forwarded that the Downpatrick branch remains in a very active condition. It would appear that in some districts a trade union association is at work organising strikes to enforce their demands, and a "down-tools" strike has recently materialised amongst the attendants at Armagh Asylum. Such regrettable incidents are to be deprecated in a calling dealing not with mere material industries but with the care and nursing of deeply afflicted fellow-creatures, and Mr. Nolan has wisely discussed with his own staff, convened as a meeting of the Down District Asylum Branch of the Asylum Workers' Association, the attitude which self-respecting nurses and attendants should assume, not only in their own material interests but with a sympathetic appreciation of their duty towards the unfortunate patients committed to their charge. In these days of unrest it is essential that, on the one hand, there should be a loyal discharge of duty, and, on the other, just recognition and liberal treatment; and such were the objects the Asylum Workers' Association set out to secure by conciliatory methods. Resolutions were subsequently proposed by attendants in favour of adequate war bonuses being granted but deprecating strikes as having a lowering effect on the status of the attendants in the public estimation, and with regard to the more liberal valuation of allowances for pension purposes, and were unanimously adopted. These matters will come up for discussion at the general annual meeting of the parent association to be held at the Mansion House, London, under the presidency of the Lord Mayor, on Wednesday, May 29th, at 3 P.M.

Armagh Asylum Strike Ended.

At the meeting of the committee of management of the Armagh Asylum on April 9th Mr. G. R. Lawless, resident medical superintendent, reported that he was happy to be able to announce that the strike of nurses and attendants, which has been in force for some weeks, was now over. He had been able to secure the services of a good number of new attendants and nurses, and he had also taken back some of the old staff on the same terms of pay, &c., as they had when they left. The meeting sanctioned the action of the medical staff in calling in the police and military, and thanked all concerned for their help in protecting and caring for the patients and asylum property.

The Enniskillen Medical Impasse.

At a meeting of the Enniskillen board of guardians, held on April 2nd, notice of motion was given by one of the members to constitute the union into two dispensary districts instead of four. It will be recollected that some time ago all the dispensary medical officers resigned owing to their request for increase of salaries being refused. The guardians on April 2nd would neither reinstate the doctors, as suggested by the Local Government Board's medical inspector, who was present, nor would they meet them in conference, their attitude being that the doctors must first withdraw their ultimatum, and then apply for the positions and be elected in the ordinary way. The doctors have been on strike now for eight weeks and nothing has been done. The Enniskillen board of guardians held their usual meeting on April 9th, and agreed as to the seriousness of the situation, but adjourned without making any arrangements for medical attendance during the ensuing week. There is still, fortunately, only a small amount of illness in the district, and some of the recalcitrant doctors are attending urgent cases free.

April 15th.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

A quarterly meeting of the Council was held on April 11th, Sir George Makins, the President, being in the chair.—It was resolved, in view of the difficulties which have arisen in regard to continuing the Erasmus Wilson lectures and demonstrations on the pathological contents of the museum, owing to the temporary removal of the specimens from the museum for storage in a place of greater safety, that these lectures and demonstrations shall be suspended until the end of the war.—It was resolved not to present an annual report to the Fellows and Members and not to hold the annual meeting this year.—It was resolved that the subject of the Jacksonian prize for the year 1919 shall be "The Investigation and Treatment of Injuries of the Thorax received in War."—It was resolved, in accordance with the recommendation of the John Tomes Prize Committee, that the John Tomes prize for the period 1915 to 1917 should be awarded to Mr. Joseph George Turner for his work on the subject of dental pathology, and Mr. Turner was requested to attend the meeting of the Council on May 9th to receive the prize.—In pursuance of the report of the examiners in anatomy and physiology of the Second Conjoint Examination the Council appointed Miss Edith Marjorie Rooke, of the London (Royal Free Hospital) School of Medicine for Women the Begley student for the ensuing three years, and she was requested to attend at the next meeting of the Council to sign the roll of Begley students and to receive the first payment, together with a document declaratory of the award.—The following two Members of the College of 20 years' standing were elected Fellows: Sir Alan Reeve Manby, M.V.O., and Colonel Sir Robert Jones, C.B., A.M.S.—Mr. Montagu Frank Hopson was re-elected a member of the Board of Examiners in Dental Surgery.—A letter was read from Mr. J. Ernest Frazer, secretary of the Anatomical Society of Great Britain and Ireland, reporting that at a meeting of the society on March 1st it was resolved to circulate among the several corporations and other bodies interested in the progress of medical education the following paragraph from the report of its Committee on Nomenclature which had been unanimously adopted by the society:—

"The committee, after consideration of the matter, unanimously reports that it sees no reason for departing from the use of the Old Nomenclature as the recognised medium of description for employment in anatomical text-books and departments or by medical men in general; on the other hand, it thinks that there are very good reasons to be urged against the adoption of any other nomenclature for this purpose."

It was resolved to refer the matter to the Court of Examiners and the Examiners in Anatomy for consideration and report.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

IT was decided at the last meeting of the Executive Committee of the Fund that a second appeal must be made to the medical profession on behalf of our suffering Belgian colleagues, their wives and families. A statement has been widely circulated during the week showing directions in which the large sum contributed to the Fund by the generosity of the medical and pharmaceutical professions has been distributed, and giving also the reasons why every endeavour must be made to maintain the Fund in all its great spheres of utility.

As a response to the circular, Dr. H. A. Des Vœux, the treasurer, is now receiving a large number of subscriptions, so large that only a portion of them can be acknowledged in our columns this week.

SUBSCRIPTIONS TO THE SECOND APPEAL.

The following subscriptions to the Fund have been received during the week ending April 15th:—

	£	s.	d.
Lieut.-Col. A. H. Mott, I.M.S.	5	0	0
Dr. John H. Teacher ...	2	2	0
Sir Kennedy Dalziel, M.B.	5	5	0
Dr. Frank Boxall	1	1	0
Dr. R. R. James	1	1	0
Dr. John Hamilton ...	1	1	0
Dr. Bannerman	1	1	0
Dr. Watson-Williams ...	6	6	0
Dr. Clifford Beale	5	5	0
Dr. Abraham Cohen ...	1	1	0
Dr. Cecil E. Salt	1	1	0
Dr. Thomas Procter ...	0	10	0
Dr. Jane H. Turnbull and Dr. Louisa Hamilton	2	2	0
Dr. George Bate	1	1	0
Dr. E. M. Goldie	1	1	0
Dr. H. L. Hatch	1	1	0
Mr. E. Treacher Collins	3	3	0
Dr. Beckett-Overy... ...	5	0	0
Dr. Hamilton Bland ...	10	10	0
Dr. Violet Coghill... ...	1	1	0
Mr. Sidney Spokes ...	2	2	0
Dr. Frank Fawssett ...	2	2	0
Dr. E. A. Seymour ...	0	10	6
Dr. Hugh Playfair ...	5	5	0
Mr. A. E. Kinsey-Taylor	1	1	0
Dr. A. E. Godfrey... ...	2	2	0
Dr. W. Bradbrook	0	10	6
Dr. Roche...	1	1	0
Dr. Isabella Macdonald..	2	2	0
Dr. J. S. Swain	0	2	6
Sir Seymour J. Sharkey	2	2	0
Dr. E. Hamilton Kyle...	2	2	0
Dr. E. H. Walker	1	0	0
Dr. J. C. King	3	3	0
Dr. C. Andrews	1	1	0
Mr. W. R. Mollison ...	10	10	0
Sir Dyce Duckworth, Bt.	3	3	0
Mr. H. H. Marsden (collected by)	1	5	0
Dr. Crawford Watson ...	1	1	0
Dr. J. P. Scatchard ...	2	2	0
Dr. J. Wallis B. Mason...	1	1	0
Dr. F. J. Nicholls	1	10	0
Dr. R. Mathewson... ...	1	0	0
Dr. G. A. Crace-Calvert	5	0	0
Dr. Stopford Taylor ...	5	0	0
Dr. Thomas Wilson ...	2	2	0
Dr. Hammond	1	1	0
Mr. David Wallace, C.M.G.	10	0	0
Dr. Sunderland	1	1	0
Mr. J. B. Lawford (for eight months)	4	0	0
Dr. James Taylor	3	3	0
Dr. J. H. Arthur (for 12 months)...	6	0	0
Dr. F. J. Turner	0	5	0
Dr. J. P. A. Gabb	2	2	0
Mr. Harbord	2	2	0
Dr. J. M. N. Popple ...	1	1	0
Dr. Hugh Davies	3	3	0
Dr. E. Croft Watts ...	1	1	0
Dr. Jacob Pickett	0	10	6
Surg.-Col. H. Habgood...	1	1	0
Monthly (m) and Quarterly (q) Subscriptions.			
Sir Alfred Pearce Gould (m)	5	0	0
Mr. E. Spencer Evans (m)		10	0
Dr. Elsie M. Chubb (£2 2s. and £2 2s. q.)	2	2	0
Dr. Alfred Cox (m) ...	1	1	0
Dr. A. B. Stevens (m) ...	1	0	0
Dr. Egbert C. Morland (m)		10	6
Dr. K. J. Dougall (m)		10	0
Dr. Legat (to continue for 6 m.)		10	6
Major Cyril H. Walker, R.A.M.C.T.	3	3	0
Dr. C. E. Michael	1	1	0
Dr. Hector Mackenzie ...	5	5	0
M.D.	0	5	0
"Kappa"	1	1	0
Dr. and Mrs. Reichwald	5	0	0
"A Sympathiser"	1	1	0
Dr. A. E. Causton	2	2	0
Dr. J. W. Sandoe	1	1	0
Dr. V. A. Chapman ...	10	0	0
Dr. J. C. Guthrie	1	1	0
Dr. Neville	1	1	0
Dr. A. S. Wilson	2	2	0
Dr. H. M. Stewart... ...	1	1	0
Dr. E. G. Cameron ...	2	0	0
Dr. N. H. Pike...	1	1	0
Dr. S. H. Lee	5	5	0
Dr. R. V. Solly	1	1	0
Dr. D. Matthewson Mackay	2	2	0
Dr. J. A. Sanderson ...	1	1	0
Dr. Lambert Lack	3	3	0
Dr. J. H. Whitham ...	1	1	0
Mr. E. H. Howlett ...	1	1	0
Dr. G. Baynton-Forge...	5	5	0
Dr. C. Elliott	2	2	0
Dr. C. H. B. Shears ...	2	0	0
Dr. J. Medley Wood ...	1	1	0
Dr. G. H. Stowe	2	2	0
Dr. T. M. Strang	5	0	0
Dr. John Watson	1	1	0
Dr. H. S. Renshaw ...	5	0	0
Drs. Hartham and Harrison	5	5	0
Dr. Joseph Horne	2	0	0
Dr. A. T. Simpson... ...	5	5	0
Dr. H. A. Mawdsley ...	1	0	0
Dr. A. Marshall	1	1	0
Dr. Murdoch	2	2	0
Dr. F. Stevenson	1	1	0
Dr. J. Gordon Black ...	2	2	0
Dr. E. W. Dewey	1	1	0
Dr. Roper	2	2	0
Dr. A. H. Radcliffe ...	2	2	0
Dr. Frank Godfrey ...	2	2	0
Major H. E. Martis ...	3	0	0
Mr. W. F. Brook	10	0	0
Dr. R. M. Fraser	1	0	0
Dr. Claude Wilson ...	2	0	0
Dr. Arnold Lyndon ...	2	2	0
Dr. Sinclair White ...	5	0	0
Dr. Thomas Drapes ...	2	2	0
Miss S. M. Witts, M.D.	3	3	0
Mr. R. Lawford Knaggs	2	2	0
Professor Delépine ...	2	2	0
Professor Sims Woodhead	3	3	0
Dr. J. Mitchell Wilson	1	1	0
Dr. Priestley Leech ...	1	1	0
Dr. Annacker	2	2	0
Dr. J. F. Forster	3	3	0
Mr. Robert Jaques ...	1	1	0
Dr. John Grimes	2	2	0
J. G. C. Mancuniensis...	5	0	0
Major R. Rowland Fothergill	1	1	0
Dr. D. Elcum (for 12 months)	6	0	0
Sir Thomas Barlow (m)		10	0
Dr. A. E. Naish (m) ...		10	0
Dr. J. W. Papillon (q)...		10	6
Dr. Hyla Greeves (m) ...		10	0
Dr. W. Ernest Good (m)		10	0
Major E. Rowland Fothergill, R.A.M.C.(m)		10	0
Mr. J. B. Lawford (10s. per m. for 8 m.)	4	0	0
Dr. J. H. Arthur (10s. per m. for 12 m.) ...	6	0	0
Dr. D. Elcum (for 12 m.)	6	0	0

It will be observed with pleasure that the system of monthly subscriptions has begun to attract attention, and it is trusted by the Committee that this method of supporting the movement, which in these days may have its advantages for many willing subscribers, will prove a source of steady income for some time to come. It will be seen that several contributors in sending donations have indicated that although the payment is made in bulk it is to be taken as representing a series of monthly subscriptions, in which form the gift is also acknowledged.

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

URBAN VITAL STATISTICS.

(Week ended April 6th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons for the year 1917, the annual rate of mortality was 16·5, against revised rates of 17·0 and 16·5 per 1000 in the two preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 17·3, or 0·3 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 4·9 in Ilford, 6·5 in Ealing, and 7·6 in Gloucester, to 24·4 in West Hartlepool, 26·3 in Great Yarmouth, and 37·0 in Barnsley. The principal epidemic diseases caused 638 deaths, which corresponded to an annual rate of 2·0 per 1000, and included 292 from measles, 218 from whooping-cough, 61 from diphtheria, 51 from infantile diarrhœa, 10 from scarlet fever, and 6 from enteric fever. Measles caused a death-rate of 3·6 in Southampton, 4·2 in Merthyr Tydfil, 4·4 in Bristol and in Leeds, 4·6 in Great Yarmouth, and 14·1 in Barnsley; whooping-cough of 2·0 in Sheffield and in South Shields, and 2·7 in Enfield; and diphtheria of 2·3 in St. Helens. The 956 cases of scarlet fever and 1505 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 9 above and 42 below the respective numbers remaining at the end of the previous week; there were also 31 cases of small-pox, including 2 new cases admitted during the week. Of the total deaths in the 96 towns, 150 resulted from violence. The causes of 40 deaths were uncertified, of which 7 were registered in Liverpool, 4 each in Birmingham and South Shields, and 3 in Hull.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 13·9, against 16·3 and 14·6 per 1000 in the two preceding weeks. The 285 deaths in Glasgow corresponded to an annual rate of 13·3 per 1000, and included 10 from whooping-cough, 9 from measles, 5 from diphtheria, 3 from infantile diarrhœa, and 1 each from enteric fever and scarlet fever. The 79 deaths in Edinburgh were equal to a rate of 12·4 per 1000, and included 1 each from diphtheria and whooping-cough.

Irish Towns.—The 167 deaths in Dublin corresponded to an annual rate of 21·8, or 1·5 per 1000 above that recorded in the previous week, and included 14 from whooping-cough, 3 from infantile diarrhœa, 2from measles, and 1 each from enteric fever and diphtheria. The 197 deaths in Belfast were equal to a rate of 26·1 per 1000, and included 9 from whooping-cough, 4 from measles, 2 from enteric fever, and 1 each from diphtheria and infantile diarrhœa.

(Week ended April 13th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 16·1, against 16·5 per 1000 in each of the two preceding weeks. In London, with a population exceeding 4,000,000 persons, the death-rate was 17·3 per 1000, and coincided with that recorded in the previous week; among the remaining towns the rates ranged from 5·9 in Edmonton, 6·5 in Southend-on-Sea, and 7·1 in Exeter to 29·1 in Hastings, 29·8 in Blackpool, and 35·9 in Barnsley. The principal epidemic diseases caused 572 deaths, which corresponded to an annual rate of 1·8 per 1000, and included 253 from measles, 217 from whooping-cough, 46 from diphtheria, 38 from infantile diarrhœa, and 9 each from scarlet fever and enteric fever. Measles caused a death-rate of 3·0 in Swindon, 3·3 in Wakefield, 4·0 in Blackpool, 4·2 in West Hartlepool, 4·4 in Hull, and 17·4 in Barnsley; whooping-cough of 1·6 in Bolton, 1·8 in Stockton-on-Tees, and 2·5 in West Hartlepool; and diphtheria of 1·7 in St. Helens. The 940 cases of scarlet fever and 1431 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 16 and 74 below the respective numbers remaining at the end of the previous week; there were also 28 cases of small-pox remaining, but no new case was admitted during the week. Of the total deaths in the 96 towns 156 resulted from violence. The causes of 36 deaths were uncertified, of which 9 were registered in Birmingham, 8 in Liverpool, and 2 each in Manchester and Carlisle.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 13·7, against 14·6 and 13·9 per 1000 in the two preceding weeks. The 303 deaths in Glasgow corresponded to an annual rate of 14·2 per 1000, and included 11 from measles, 8 from whooping-cough, 5 from infantile diarrhœa, and 1 from scarlet fever. The 78 deaths in Edinburgh were equal to a rate of 12·2 per 1000, and included a fatal case each of measles and diphtheria.

Irish Towns.—The 184 deaths in Dublin corresponded to an annual rate of 24·0, or 2·2 per 1000 above that recorded in the previous week, and included 9 from whooping-cough, 3 each from enteric fever and infantile diarrhœa, and 2 from measles. The 182 deaths in Belfast were equal to a rate of 24·1 per 1000, and included 20 from whooping-cough, 5 from measles, 2 each from diphtheria and infantile diarrhœa, and 1 from enteric fever

The War.

THE CASUALTY LIST.

THE following medical officers appear among the casualties announced since our last issue :—

Killed.

Capt. D. W. Hunter, D.S.O., R.A.M.C., attached West Yorks Regiment, was educated at Glasgow University and qualified in 1901. Prior to joining the R.A.M.C. he was in practice at Bradford, Yorks. The award of D.S.O. was recorded in THE LANCET of Sept. 2nd, 1916, p. 450.

Major J. S. Wallace, M.C., R.A.M.C., was a student at University College, London, and qualified in 1915, and joined up shortly afterwards. The award of the M.C. was recorded in THE LANCET of August 4th, 1917, p. 176.

Capt. R. H. Thomas, R.A.M.C., attached Royal Scottish Fusiliers, qualified in 1909 at Ontario, Canada, and was in practice in Toronto before coming over with the Canadian Expeditionary Force.

Capt. S. E. McClatchley, R.A.M.C., attached Welsh Regiment, was educated at Manchester University, and qualified in 1911. He held an appointment at the Royal Infirmary, Preston, and was in practice at Didsbury, Manchester, prior to joining the R.A.M.C.

Capt. W. Brownlie, R.A.M.C., attached Yorks Regiment, was educated at Edinburgh University, and qualified at the end of 1915, joining up forthwith.

[We learn with much pleasure from his sister that Capt. E. H. Griffin, D.S.O., M.C., R.A.M.C., whose death was officially announced last week, and recorded in THE LANCET of April 13th, p. 546, is alive, but is wounded and a prisoner.]

Died of Wounds.

Capt. J. Carmichael, Canadian A.M.C., qualified at the Queen's University, Kingston, Ontario, in 1915.

Capt. C. E. A. Wilson, R.A.M.C., attached Rifle Brigade, was educated at Oxford and at St. Thomas's Hospital, London, and qualified in 1902. He held appointments at the Blackheath Cottage Hospital, at the Hospital for Sick Children, Great Ormond-street, London, and at the General Hospital, Birmingham, and prior to joining up in 1916 was in practice at Petworth, Sussex.

Major J. W. Anderson, M.C., R.A.M.C., attached Royal Welsh Fusiliers, was educated at University College, Liverpool, and qualified in 1898. He held appointments at the Southport Infirmary and at the Royal Infirmary, Liverpool, and was in practice at Llanfairclereinion, Montgomeryshire, prior to joining the R.A.M.C. The award of the M.C. was recorded in THE LANCET of Jan. 22nd, 1916, p. 215.

Previously reported Missing, now reported Accidentally Drowned.

Surg. A. F. McIntosh, R.N., was educated at Glasgow University and qualified in 1915.

Wounded.

Major F. A. E. Crew, Devon Regiment, attached R.A.M.C.
Major G. E. Ferguson, R.A.M.C.
Capt. C. H. S. Redmond, R.A.M.C.
Capt. W. J. Scade, M.C., R.A.M.C.
Capt. J. W. Hagey, Canadian A.M.C.
Capt. R. C. B. Briscoe, R.A.M.C.
Capt. E. Forbes, R.A.M.C., attached K.O.Y.L.I.
Capt. A. W. Gill, R.A.M.C., attached Dorset Regiment.
Lieut. D. T. Harris, R.A.M.C., attached R.F.A.
Capt. W. A. Hislop, R.A.M.C., attached Sherwood Foresters.
Major B. F. Bartlett, R.A.M.C., attached Wilts Regiment.
Capt. T. M. Davie, M.C., R.A.M.C., attached Gordons.
Capt. A. W. Forrest, R.A.M.C.
Capt. C. M. Gozney, M.C., R.A.M.C.
Capt. F. N. Stewart, M.C., R.A.M.C., attd. Cheshire Regt.
Capt. L. A. Celestin, R.A.M.C., attd. Yorks and Lancs Regt.
Capt. A. C. Hancock, M.C., R.A.M.C.
Capt. G. W. B. James, R.A.M.C., attached K.O.S.B.
Capt. A. Ball, R.A.M.C., attached R.F.A.
Capt. T. F. Corkill, M.C., R.A.M.C.
Capt. P. M. MacLachlan, M.C., R.A.M.C., attached Hampshire Regiment.
Capt. J. Manuel, M.C., R.A.M.C., attd. Royal Warwick Regt.
Capt. H. G. Pesel, R.A.M.C.
Capt. A. U. Webster, R.A.M.C.
Lieut. A. H. Southam, R.A.M.C.

Wounded and Missing.

Capt. T. A. Townsend, R.A.M.C.

Missing.

Capt. C. H. C. Byrne, R.A.M.C., attd. Royal Berks Regt.
Capt. H. S. Moore, R.A.M.C., attd. Royal West Kent Regt.
Capt. A. C. Hepburn, R.A.M.C.
Capt. J. A. Gilfillan, R.A.M.C.
Capt. P. A. Green, R.A.M.C.
Capt. W. J. Hirst, R.A.M.C.
Capt. C. E. Redman, R.A.M.C.
Capt. E. A. Walker, M.C., R.A.M.C.
Major J. Kennedy, R.A.M.C.
Lieut. E. N. P. Martland, R.A.M.C. attd London Regiment.
*Capt. J. C. Muir, R.A.M.C., attd. Durham Light Infantry.
Capt. S. Smith, M.C., R.A.M.C., attd. West Yorks Regiment.
Capt. R. M. Soames, R.A.M.C., attached Norfolk Regiment.
Capt. F. Dallimore, M.C., R.A.M.C., attd. London Regiment.
Capt. J. G. M. Molony, R.A.M.C., attd. London Regiment.

* Capt. Muir is unofficially reported to be a prisoner and unwounded.

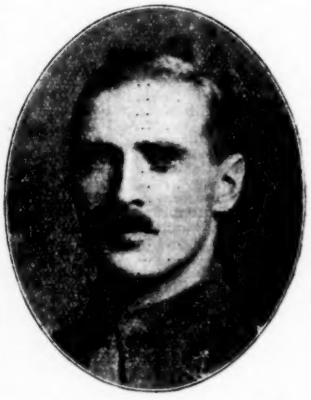
OBITUARY OF THE WAR.

ROBERT GERALD McELNEY, M.B., B.CH. BELF.,

MILITARY CROSS,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain R. G. McElney, who was killed on the Western front on March 21st, at the age of 25 years, was eldest son of Rev. Robert McElney, M.A., of Downpatrick. After a distinguished career at Campbell College, Belfast, he entered Queen's University, Belfast, with an entrance scholarship. Joining the University O.T.C. he obtained a commission in April, 1913, in the R.A.M.C. (S.R.), taking his training at Aldershot in that year. Qualifying M.B., B.Ch. in July, 1915, he was sent to France three months later attached to a field ambulance. In 1916 he was awarded the Military Cross for great gallantry and courage in attending and bringing in the wounded under a heavy shell fire lasting 34 hours. Letters from his superior officers speak of his courage and the high order of his professional skill. Captain McElney had distinguished himself as a swimmer, and held the bronze medal of the Royal Life Saving Society, as well as a vellum certificate of the Royal Humane Society for saving life in a drowning accident near Downpatrick.



HAROLD DUNKERLEY, M.A. CAMB., M.R.C.S. ENG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain H. Dunkerley, who was killed on the Western front on March 23rd, was 28 years of age and younger son of Herbert Dunkerley, of Bombay. He was educated at Downing College, Cambridge, where he took his degree in 1912, going up to the London Hospital for his clinical studies. Taking his Conjoint qualification in 1914, he obtained a commission in the R.A.M.C. in the last month of that year and went to France with the 8th Rifle Brigade. After nine months' service he was wounded and invalided home, and on returning was attached to a British stationary hospital at Boulogne. Later he was with the North Somerset Yeomanry, and was ultimately transferred to a field ambulance, with which he worked till his death.

Captain Dunkerley is described by a medical friend as an enthusiastic worker and one possessed of great personal charm. He leaves a young wife to mourn her loss.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Second Lieut. J. G. Glendinning, Monmouth Regiment, attached R.F.C., killed in action, only son of Dr. J. Glendinning, of Hillcrest, Abergavenny.

Lieut. R. A. Hamilton, King's Own Yorkshire Light Infantry, killed in action, only son of Mr. R. J. Hamilton, F.R.C.S., of Liverpool.

Sub-Lieut. H. A. H. S. Kenny, R.N.D., killed in action, only son of the late Mr. A. S. Kenny, F.R.C.S., of Onehunga, New Zealand.

Lieut. J. W. Church, Hertfordshire Regiment, killed in action, eldest son of Sir W. S. Church, Bart., K.C.B., late President of the Royal College of Physicians of London.

Second Lieut. J. Hamer, K.S.L.I., killed in action, elder son of Dr. W. H. Hamer, of Dartmouth Park-hill, London.

Lieut. D. Stalker, R.F.A., died of wounds, eldest son of Professor A. M. Stalker, of St. Andrews University, Dundee.

Capt. D. Spurway, Yorkshire Regiment, killed in action, elder son of Dr. J. Spurway, of Kilburn, London.

—— M. Beverley, M.M., Australian Infantry, killed in action, elder son of Dr. M. Beverley, of Scole, Norfolk.

Lieut. W. D. Featherstone, M.C., R.F.A., killed in action, younger son of Dr. W. B. Featherstone, of Erdington, Birmingham.

Second Lieut. T. G. Holmes, R.F.A., attached R.H.A., killed in action, younger son of Dr. T. Holmes, of Cheltenham.

THE HONOURS LIST.

The following awards to medical officers in connexion with the operations culminating in the capture of Jerusalem are announced:—

C.M.G.—Col. R. H. Luce, C.B.

D.S.O.—Temp. Maj. J. J. Abraham, R.A.M.C.; Lt.-Col. (Temp. Col.) G. A. T. Bray, R.A.M.C.; Maj. (Temp. Lt.-Col.) R. J. Cahill, R.A.M.C.; Lt.-Col. (Temp. Col.) E. B. Dowsett, R.A.M.C.; Maj. (Temp. Lt.-Col.) M. Dunning, R.A.M.C.; Col. E. J. R. Evatt, R.A.M.C.; Capt. (acting Lt.-Col.) E. C. Lambkin, R.A.M.C.; Maj. (Temp. Col.) H. Richardson, R.A.M.C.; Temp. Lt.-Col. H. Wade, R.A.M.C.

Military Cross.—Temp. Capt. G. F. Bird, R.A.M.C.; Capt. P. S. Martin, R.A.M.C.; Capt. A. B. Mitchell, R.A.M.C.; Capt. J. M. Mitchell, R.A.M.C.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary surgeons: J. D. Brown, A. Ritchie, T. H. R. McKiernan, R. W. Nesbitt.

ARMY MEDICAL SERVICE.

Major-General Sir William Babtie, V.C., K.C.M.G., C.B., to be Inspector of Medical Services and to be temporary Lieutenant-General.

Major-General Sir Francis H. Treherne, K.C.M.G., is placed on retired pay.

Surgeon Lieut.-Col. Sir Peter J. Freyer, K.C.B., retired, Indian Medical Service, to be temporary Honorary Colonel.

Temp. Lieut.-Gen. Sir G. H. Makins, K.C.M.G., C.B., reverts to the temporary rank of Major-General on ceasing to be specially employed.

Col. J. Thomson, C.B., to be temporary Major-General.

Col. Ll. T. M. Nash, C.M.G., is placed on retired pay.

ROYAL ARMY MEDICAL CORPS.

Temp. Major (Captain, R.A.M.C. (T.F.)), P. N. B. Odgers relinquishes his temporary commission on re-posting.

Temp. Capt. (acting Major) F. B. Bowman, Canadian A.M.C., is seconded for duty with the War Office.

Temp. Lieut.-Colonel R. Raikes, Canadian A.M.C., is seconded for duty with the Board of Pensions Commissioners for Canada (British Branch), without pay and allowances.

Temporary Captains to be temporary Majors (without increased emoluments) whilst specially employed: W. Kennedy-Taylor, R. Semple, J. B. Howell.

Temp. Capt. W. H. Allen relinquishes the acting rank of Major on re-posting.

Late temporary Captains granted the honorary rank of Captain: R. P. McDonnell, S. J. Scott.

Temporary Lieutenants to be temporary Captains: A. S. Webley, S. Stockman, R. W. Greatorex, J. M. Glasse.

A. W. Hall, late temporary Lieutenant, is granted the honorary rank of Lieutenant.

Officers relinquishing their commissions: Capts. E. H. Wood, H. Wacher. Temp. Capts. W. H. Allen (granted the honorary rank of Captain), L. E. Hertslet, D. C. Graham (on account of ill-health, granted the honorary rank of Captain), E. R. Eatock (on account of ill-health contracted on active service, granted the honorary rank of Captain). Temp. Lieuts. S. B. Couper, J. L. Green (on account of ill-health contracted on active service, granted the honorary rank of Lieutenant), G. F. Fismer, T. S. Mitchell (on account of ill-health, granted the honorary rank of Lieutenant), G. Nelson (on account of ill-health contracted on active service, granted the honorary rank of Lieutenant); Temp. Hon. Lieuts. A. O. Raymond, B. Farrior, C. H. Evans.

SPECIAL RESERVE OF OFFICERS.

Capt. S. B. King relinquishes his commission on account of ill-health.

Lieutenants to be Captains: E. ff. Creed, J. R. John, F. K. Haymon, G. E. Archer, J. B. Leigh, J. W. T. Thomas.

D. J. A. Lewis to be Lieutenant.

TERRITORIAL FORCE.

Major (temp. Lieut.-Col.) P. S. Hichens to be Lieutenant-Colonel.

Major (temp. Lieut.-Col.) J. Mackinnon D.S.O., is seconded whilst holding an appointment as Assistant Director of Medical Services, and to be temporary Colonel whilst so employed.

Captains to be acting Majors whilst specially employed: W. A. Robertson, G. H. H. Manfield, R. V. Favell, A. L. Yates, H. Henry, D. H. Weir, J. W. Anderson, M.C., C. P. Brentnall, D. H. Scott, C. F. M. Saint, F. Ellis, M.C., E. C. Plummer, I. C. Marshall, F. C. Chandler, A. M. Mackay, W. J. Purves, C. A. Webster, N. H. H. Haskins, H. E. S. Richards, W. R. Pierce, F. Hauxwell, J. C. Grieve, M.C., W. Stobie, T. J. Wright, R. G. Badenock, J. W. Craven, M.C., F. A. Roper, H. B. Low, M.C., H. N. Goode, A. Anderson.

Capt. R. Armstrong is seconded whilst holding appointment as Deputy Assistant Director of Medical Services.

Capt. C. F. Coombs to be acting Major whilst commanding a section of a General Hospital.

Capt. (temp. Major) H. F. Everett relinquishes his temporary rank on alteration in posting.

Capt. D. W. Hardy is restored to the establishment on vacating the appointment as Deputy Assistant Director of Medical Services.

Captains seconded for duty with a General Hospital: A. A. Pratt, H. B. W. Smith, J. B. Macalpine.

Capts. M. J. Stewart, P. R. Wrigley, H. Mason, H. C. Snell, J. Broadley, and J. Stokes are restored to the establishment.

Capt. W. W. Linington (late R.A.M.C.) to be temporary Major, Kent Medical Volunteer Corps.

E. L. N. Pridmore (late Captain, 2nd Dorset Volunteer Artillery) to be temporary Captain, Kent Medical Volunteer Corps.

To be temporary Captains, Kent Medical Volunteer Corps: S. A. E. Griffiths, F. E. Nichol, W. R. Brunton.

Medical Officer and Temp. Lieut. William Benton resigns his commission in the 1st Battalion Essex Volunteer Regiment.

C. G. Henderson to be temporary Captain, Northumberland Medical Volunteer Corps.

To be temporary Captains, Nottinghamshire Motor Volunteer Corps: P. G. Whatnall, L. H. Ransome.

W. Hunter to be Medical Officer and temporary Lieutenant, Nottinghamshire Volunteer Corps.

INDIAN MEDICAL SERVICE.

Lieut.-Col. A. Gwyther retires in consequence of ill-health.

Cajetan Fernandes to be temporary Honorary Captain.

To be temporary Lieutenants: J. F. Richardson, Rugh Nath Rai, Perumemba Avvasami Acyer Ramanathan, Puthukkeril Koshy Koshy, Villupurum Rajaratna Natesan, Sivasubramanya Pillay Kanthimathinathan, Bagepalli Venkatavarada Acharya, Koladi Gopal Menon, Ravanasamudram Sundaramayyar Harihara Ayyar, Sukumar Sanyal, Kali Prasad Bagchi.

COLONIAL MEDICAL SERVICE.

West African Medical Staff.—Dr. A. E. Horn, Senior M.O., Nigeria (Northern Provinces), has been promoted to Provincial M.O.; Mr. R. O. White to Senior M.O., Gold Coast; and Dr. H. R. Ellis to Senior M.O., Nigeria (Southern Provinces). The death is reported of Dr. A. S. T. Swann, M.O., Nigeria (N.P.), who was lost in the sinking of the *Apapa* by enemy action; and of Mr. H. L. Burgess, Dr. J. E. L. Johnston, M.O's., Nigeria (N.P.), and Dr. K. Manson, M.O., Gold Coast, who were lost at sea in the *Umgeni*. Mr. J. S. Pearson has been transferred from Gold Coast to Sierra Leone, Dr. E. F. Ward from Sierra Leone to Gambia, and Dr. R. F. Williams from Nigeria (N.P.) to Gold Coast. The following retirements have been announced: Dr. R. G. Ball, M.O., Gold Coast (with a gratuity); and Mr. E. Brabazon, M.O., Gold Coast; Mr. D. Burrows, Provincial M.O., Sierra Leone; Dr. C. T. Costello, M.O., Nigeria (N.P.); Mr. G. de P. D'Amico, M.O., Gold Coast; Mr. R. Mugliston, M.O., Gold Coast; and Mr. A. W. S. Smythe, M.O., Nigeria (S.P.) (each on pension). Mr. J. R. C. Stephens has been appointed Temp. M.O., Nigeria. Mr. J. S. Pearson, Sierra Leone, has been granted a temporary commission in the R.A.M.C. The following have returned to the staff from temporary employment in the R.A.M.C.: Drs. F. C. V. Thompson, B. J. Courtney (Nigeria), C. L. Ivers (Gold Coast), R. F. Williams, M.C. (Gold Coast). The following are employed on military duties in East Africa: Drs. P. W. Black, B. T. Courtney, W. J. Martyn-Clark, G. Wilson (Nigeria), J. M. O'Brien, W. A. Ryan, W. M. Wade, R. F. Williams, E. H. Mayhew (Sierra Leone). Mr. C. L. Ivers (Gold Coast) has been temporarily lent for service under the Provisional Civil Administration, German East Africa.

Surgeon-General Sir Arthur W. May, R.N., K.C.B., has been appointed a Deputy Lieutenant for the county of Cornwall.

IN opening a bazaar last week at Woolwich Town Hall in aid of a fund for erecting a hospital as a memorial to local men who have fallen in the war, Lord Burnham characterised the lack of hospital accommodation on the outer fringe of London as a scandal which he proposed to do his best to remedy.

HOSPITAL SATURDAY FUND.—The annual meeting of this Fund was held at the Mansion House, London, on April 13th, when the Lord Mayor presided. The report showed that the receipts amounted to £59,228, as compared with £56,610 in 1916. Sir Vezey Strong said that last year's collection was the largest ever made for the Fund, and the King had expressed his appreciation of the fact that this was mainly due to the unsparing activities of the honorary workers.

Correspondence.

"Audi alteram partem."

THE PARLIAMENTARY REPRESENTATION OF THE COMBINED UNIVERSITIES.

To the Editor of THE LANCET.

SIR,—Like probably many others, I have received a circular from a self-constituted committee which seems desirous to appropriate for a Conservative or Unionist the seat in Parliament given to some seven Universities. Allusion to this circular was made on p. 452 of THE LANCET on March 23rd.

May I venture to urge my co-electors in all the Universities in question to set their faces like steel against the introduction of politics, especially of a kind now becoming rapidly obsolete? That some united action is necessary will be apparent to all the graduates; but I would voice a wish that what we at this juncture require—after a compromise between the several Universities concerned and the professions involved—are candidates keen on social questions—whether educational, health, or otherwise—who know their subject and who we can support (financially if necessary) at the election and afterwards in their work.

Will those in authority in these Universities who are representative of the professions involved wake up and give the graduates an opportunity to crystallise their opinions and actions before it is too late?

I am, Sir, yours faithfully,

E. ROWLAND FOTHERGILL, M.B. Durh., &c.

Hove, April 11th, 1918.

ELECTRO-CARDIOGRAPHIC DEPRESSION PRODUCED BY DIGITALIS.

To the Editor of THE LANCET.

SIR,—If Dr. I. Harris's interpretation of the depression between R and T in some electro-cardiograms in patients under the influence of digitalis in your issue of March 30th is correct, I agree with the writer that the observation is of great practical value. That the depression was more easily produced in "diseased heart muscle" cases tends to confirm the explanation. The value of the paper would have been enhanced if the age-groups of the patients had been given. It is well recognised that the distensibility of the chambers of the heart diminishes as age advances, from fibrotic changes in the heart muscle, consequently, with these less depression should occur. On the other hand, a fatty heart should be prone to yield. Perhaps Dr. Harris will continue his observations and place the cases in two or three series according to age, &c.

Sir Samuel Wilks in the "'70's" taught that the slowing effect on the pulse by digitalis was due to the tonic effect of the drug on the heart muscle whereby a number of frequent ineffective contractions are replaced by fewer and more effective ones. This beneficial effect was seen at its best in the condition now recognised as auricular fibrillation.

Dr. Harris incidentally raises the question of the relative value of large and small doses of digitalis. I suggest that it is a good rule not to give more of a drug than is necessary to produce the required result and there is, generally speaking, less risk in giving oft-repeated small doses than massive ones. When large or repeated doses of digitalis are prescribed it is well that the patient should be kept in bed until the effect of the treatment has been noted. This is especially important when the patient is not under close observation.

I am, Sir, yours faithfully,

Harley-street, W., April 10th, 1918. CHARLES W. CHAPMAN.

EPIDEMIC CATARRHAL JAUNDICE IN ENGLAND.

To the Editor of THE LANCET.

SIR,—I was interested in reading Captain G. C. Gray's note on this subject in THE LANCET of April 6th. Between Oct. 13th, 1917, and March 31st, 1918, I have attended 15 cases of catarrhal jaundice. All my cases have been in children from 5 to 16 years, and eight of them were 6 years old. There were nine girls and six boys. In one instance three members of one household were attacked and in two instances two, the period of time elapsing between the cases being from 10 to 28 days. The symptoms were much the same in all cases—viz., a mild fever, rarely above 100° F.; the child was "off colour," refused food, and complained of feeling sick. About the third or fourth day the child usually vomited, and jaundice appeared. In all cases the jaundice was mild and the child was quite well at the end of a fortnight. There was no enlargement of the liver or spleen in any case. In one case (a girl of 6½) symptoms of acute tuberculosis of left hip-joint set in within a fortnight. This was followed by a psoas abscess and signs of tuberculous peritonitis.

I am, Sir, yours faithfully,

S. HARTILL, M.B., B.Ch. Oxon.

Abbots Langley, Herts, April 10th, 1918.

ARMY NEPHRITIS.

To the Editor of THE LANCET.

SIR,—Looking back through my notes I can find no definite evidence to corroborate Dr. Reginald Hartley's interesting experience (THE LANCET, April 13th) to the effect that morphia may actually reduce the output of albumin in the urine. So far as I could discover, no drug had any directly restraining effect on the evolution of the renal lesion.

I am, Sir, yours faithfully,

C. F. COOMBS,
Major, R.A.M.C.(T.)

Clifton, Bristol, April 16th, 1918.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At the examination in Sanitary Science held recently the following candidates satisfied the examiners in both parts of the examination:—

Lieutenant-Colonel Dudley William Boswell, R.A.M.C., *Edna Mary Goffe, James Lackhead Gregory, May Isabella Turner Reid, *Captain Alexander James Hutchison Russell, I.M.S., Jane Stalker, and Captain Edgar James Tyrrell, R.A.M.C.

* Distinguished in Bacteriology.

UNIVERSITY OF LONDON.—At examinations held recently the following candidates were successful:—

SECOND EXAMINATION FOR MEDICAL DEGREES.

Part I.—**Janet Kerr Aitken and Ruth Mildred Arkwright, London School of Medicine for Women; John Vincent Armstrong, St. Mary's Hospital; Helen Rosaline Ashton, London School of Medicine for Women; Edward Townley Bailey, Middlesex Hospital; Henry Marcus Bird, City of London School; Brian Blakelock, St. Thomas's Hospital; Mary Hilda Youle Blakeston, Rosalind Bradley, Lorna Phœbe Brown, and Edith Kathleen Budden, London School of Medicine for Women; Charles Louis Crawford Burns, St. Thomas's Hospital; Arthur Nicholas Carter, University College; Marjorie Frances Cartledge, London School of Medicine for Women; Kathleen Frances Cawthorne, University College; Grace Dorothy Chambers, B.A., London School of Medicine for Women; James Charles Churcher, St. Thomas's Hospital; Annie Eveline Connan and Gwendolen Coode Cotton, London School of Medicine for Women; Bernard Deichowsky, King's College; Edward Charles Dodds, Middlesex Hospital; Barsoum Dous, King's College; Helen Winifred Duncan and Marguerite Elman, London School of Medicine for Women; Lucy Margaret Elsom, King's College; Doris Kathleen Emery, London School of Medicine for Women; Frankis Tilney Evans, St. Bartholomew's Hospital; Vivian Feldman, University College; Emmie Dorothy Fenwick, London School of Medicine for Women; Hugh Scott Forbes, University College; Dora Janet Fox, Hilda Margaret Garlick, and Lena Bella Gayer, London School of Medicine for Women; Dorothy Gibson, Newnham College; Marjory Annie Godfrey and Janet Vera Good, London School of Medicine for Women; Arthur William Gott and Muriel Dorothea Graham, University of Leeds; Eleanor May Grantham, London School of Medicine for Women; John Fereday Hackwood, St. Thomas's Hospital; Doris Mary Hammond, London School of Medicine for Women; Phœbe Bliss Hickling, University College; Edith Winifred Wheelton Hind, London School of Medicine for Women; Donald Methuen Hutchinson, University of Sheffield; Lily Graham Iliff, Erna Henrietta Jebens, and Eva Mary Johnson, London School of Medicine for Women; Edmund Mervyn Jones, University College, Cardiff; Gladys Hilda Emma Harriette Jane Jones, London School of Medicine for Women; Harry Cyril Killingback, St. Bartholomew's Hospital; Alfred Thomas Lock Kingdon, University College; Gladys Muriel Lambourne, London School of Medicine for Women; Henry Dillon Lawson, London Hospital; Ruth Arminal Mary Leak, King's College; Ivor Lewis, University College, Cardiff; *David Martyn Lloyd-Jones, St. Bartholomew's Hospital; Alison Nicol Macbeth, University College; Ivan Bailey McCann, Guy's Hospital; Caroline Gordon Lennox McHardy, Muriel Mackintosh, Phyllis Margaret Manson, Clara Edith Mathias, Merell Philippa Middlemore, and *Enid Marjorie Moore, London School of Medicine for Women; Andrew John Morland, University College; Olga Mary Naylor, London School of Medicine for Women; Hubert William Needham, St. Bartholomew's Hospital; Elizabeth Muriel Nicholson-Smith, London School of Medicine for**

Women; Thomas Charles Oliver, London Hospital; Enid Mary Powell, University College, Cardiff; Cyril Seymour Coode Prance, St. Bartholomew's Hospital; Philippa Parry Pughe, University College; Margaret Annette Quine, Victoria University of Manchester; Dorothy Mary Rees, King's College; Louis Ignace Maxime Rémy, London Hospital; Edward Horace Richards, Guy's Hospital; Winifred Alma Roworth, University College; Elaine Margaret Katharine Salmond and Gladys Maud Sandes, London School of Medicine for Women; Samuel Sandler, London Hospital; Norah Beryl Annesley Sankey, London School of Medicine for Women; Emily Virginia Saunders-Jacobs, Newnham College; Eileen Margaret Saxton, London School of Medicine for Women; Frederick Hector Scotson, Victoria University of Manchester; Henry Gerschel Shaumer, St. Bartholomew's Hospital; Patricia Helen Simpson Shaw and Vera Elisabeth Shaw, London School of Medicine for Women; Cyril Shepherd, University College, Cardiff; Philip Steinberg, London Hospital; Dorothy Mary Stewart, Eleanor Charlotte Emma Stone, and Emma Marjorie Store, London School of Medicine for Women; Edward Howard Strange, University College, Cardiff;* Mary Irene Symons and Beatrice Teverson, London School of Medicine for Women; *Eric Waldo Caryl Thomas, St. Bartholomew's Hospital; William Thomas, London Hospital; Gladys Mary Tullidge, London School of Medicine for Women; *Joseph Whitby, Middlesex Hospital; and Hilda Margaret Whitfield, Marian Elspeth Williams, Harriette Barbara Woodhouse, and Eva Young, London School of Medicine for Women.

Part II.—Doris Elizabeth Alcock, London School of Medicine for Women; Christopher Howard Andrewes, St. Bartholomew's Hospital; Sarah Elizabeth Andrews, King's College and London School of Medicine for Women; Marjorie Henrietta S. Auden, † Frances Sophia Barry, and Geraldine Mary Barry, London School of Medicine for Women; Grace Mary Beaven, St. George's Hospital and London School of Medicine for Women; Davis Evan Bedford, Middlesex Hospital; Hylda Catherine Briscoe, King's College and London School of Medicine for Women; Anaple Frances Mary Christie, London School of Medicine for Women; Geoffrey Hugh Alexander P. Clavier, London Hospital; Henry Nathan Warner Collins, B.Sc., King's College; Philippe Couacaud, Guy's Hospital; Elsie Eleanor Cowperthwaite, and Barbara Cubitt, London School of Medicine for Women; Dermot Dominic Randal Dale, St. Bartholomew's Hospital; Alfred Henry Gerald Down, University College; Edith Monica Down, Edith Marian Evans, and Ada Marion Freeman, London School of Medicine for Women; Mark Garden, London Hospital; Janet Katharine Gatty, King's College and Charing Cross Hospital; Madeline Giles and Gertrude Eleanor Harre, London School of Medicine for Women; Henry Albert Harris, University College; Frank Heber, London Hospital; Doris Marjorie Howard, St. Mary's Hospital; Winifred Mary Jenkins and Dorothy Maud Kemp, London School of Medicine for Women; Mary Elisabeth Kennedy, University of Cambridge; Doris Gertrude Knowles, London School of Medicine for Women; Joseph Victor Landau and John Neil Leitch, St. Bartholomew's Hospital; Margaret Longbottom, London School of Medicine for Women; Gerald Joseph Wyld McMichael, University of Birmingham and University College; Rupert Alexander Madgwick, London Hospital; Henrietta Alexandrina C. Main, London School of Medicine for Women; Framroz Nanabhoy Moos, Grant Medical College, Bombay, and Middlesex Hospital; Eva Joyce Newton, Sybil Mary Nuttall, Alice Owen, Winifred Peacey, Phœbe Myfanwy Phillips, Marjorie Pierce, Winifred Catherine Piggott, and Evelyn Violet Pilley, London School of Medicine for Women; Montague Henry Renall, B.Sc., University College, Cardiff, and St. Bartholomew's Hospital; Philip Lawrence Richardson, Guy's Hospital; William George Rose, St. Mary's Hospital; †Gerald Maurice Joseph Slot, St. Bartholomew's Hospital; Harold Edward Suter, St. Mary's Hospital; Mark Tree, London Hospital; William Gilbert Desmond Harold Urwick, St. Bartholomew's Hospital; Norah Walden, London School of Medicine for Women; Mildred Warde, Victoria University of Manchester; Alfred Douglas Weeden, Middlesex Hospital; ‡ Agnes Edie Westwood and Constance Muriel Willis, London School of Medicine for Women; and Samson Wright, Middlesex Hospital.

* Awarded a mark of distinction.

† Distinguished in Pharmacology. ‡ Distinguished in Physiology.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At examinations held recently the following candidates were successful:—

THIRD EXAMINATION.

John Haldane Bain, Taomas Arnoldus du Toit, John Archibald Steel Campbell, George Coote Field, Daniel David Fernandes, Joseph Campbell, Alexander Forsyth Caddell, John Bruce Watson Telford, Andre Antoine X. Lamaletie, Thomas Francis Kelly, Andrew Gold, John Murray, and Sidney Hill Waddy.

Pathology.—Henry Aldon Newton and Ronald McKinnon.

Materia Medica.—Donald Mackay, William Campbell, William Barton, Jessie Melville Lyell Wright, James MacGlashan, John Rorrison McGubbing, Agnes Macilwraith Hill, Janet Adeline Agnes Sang, Robert Smith, Gracie Olwen Davies Evans, Anup Singh Narula, and George Murray Shaw Lindsay.

FINAL EXAMINATION.

Hugh William Howatson, Samuel Amery Faulkner, Albert Ernest Hempleman, Indra-narayan Borrah, George Henry Charlesworth Harding, Archibald Paterson Robb, Daniel Cornelius Howard, Reginald Hampstead Malone, Paul Vertannes, Ernest Ebenezer Bronstorph, Donald Macdonald MacLeod, John Herbert Blackburn, Alfred Parker, Thomas Hall James Douglas, and Hugh Millar.

Surgery.—Arthur Stanley Hughes.

Midwifery.—Jacob Johannes van Nirkerk, Don Alfred Walpola, Alan Herbert Brooke Hudson, Reginald Joseph Patchett, and Arthur Stanley Hughes.

Medical Jurisprudence.—Hugh McIlroy, Jatindra Kumar Sen, Norman Joseph Patterson, Iain Ross MacPhail, Reginald Joseph Patchett, Richard Gordon Bell, and Richard Arthur Cooper.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Medical Men and Military Service.

THE Military Service Bill, which raises the military age generally to 50 and in the case of medical men to 55, has been passed through all its stages and read a third time by the House of Commons. A medical man is deemed under the Bill to be within its scope until he has actually reached the age of 55. The position of the profession was discussed in the course of the proceedings in Committee on Friday, April 12th, when Sir AUCKLAND GEDDES, the Minister of National Service, dealt with some of the considerations involved in the decision to adopt a higher age-limit in the case of medical practitioners.

HOUSE OF COMMONS.

THURSDAY, APRIL 11TH.

Venereal Disease.

Mr. KING asked the Home Secretary whether he had issued a new Defence of the Realm Regulation under which women could be prosecuted for soliciting or holding sexual intercourse when suffering from venereal disease; if so, in how many cases had prosecutions been instituted under this Regulation and with what results; and whether he proposed to issue another Regulation which would similarly apply to males who solicited or held sexual intercourse when they were suffering from venereal disease.

Mr. LEES SMITH asked the right honourable gentleman whether it was intended to follow up the new Regulation 40c, under the Defence of the Realm Acts, with regard to women suffering from venereal disease by a similar regulation with regard to men.—Sir G. CAVE replied: Regulation 40 D, which applies only when the health of sailors or soldiers is endangered, was made at the instance of the naval and military authorities, and in consequence of the urgent request of the representatives of the Dominions overseas that steps should be taken with a view to checking the spread of venereal disease among the forces, and questions relating to the regulation should be addressed to these authorities. I am not aware that any prosecutions have as yet been instituted. It would be impossible under the powers given by the Defence of the Realm Act to make such a regulation applying to the population as a whole, but the Criminal Law Amendment Bill, which will shortly be introduced in another place, will contain a clause similar to that which was accepted by a committee of the House of Commons last session and which applied to persons of both sexes.

Mr. H. SAMUEL: Has the right honourable gentleman in mind that there is a clause in the Bill to which he refers passed by the Standing Committee which applies to both sexes, and can he say why this regulation made by the Executive should not apply to both sexes, so far as it applies to persons affected by the regulation?—Sir G. CAVE: I have already replied to that in answer to the questions. It is not in the power of the Privy Council under the Defence of the Realm Act to make a regulation applicable to both sexes. It is only for the protection of His Majesty's Forces. The clause of the Bill to which the right honourable gentleman refers will, of course, apply to both sexes.

Mr. SAMUEL: Cannot the regulation be applied to members of H.M.'s Forces as well as to women?—Sir G. CAVE: No, sir.

Pleas of Shell Shock at Courts-Martial.

Sir WILLIAM COLLINS asked the Under Secretary for War whether when, as a result of court-martial proceedings at which a plea of shell shock or other form of mental disorder was raised, a medical board was restricted to an inquiry as to whether what was known as the Macnaghten formula applied at the time of the commission of the alleged offence.—Mr. MACPHERSON answered: When a medical board is directed to be held as a result of court-martial proceedings at which a plea of shell shock or other form of mental disorder is raised, the instructions generally given to the Board are that they are to report, firstly, as to the mental condition of the accused at the time of their examination; and, secondly, whether in their opinion the accused was responsible for his actions at the time of the commission of the offence of which he was convicted. The attention of the board is specifically directed to Paragraph 9 of Chapter VII. of the "Manual of Military Law," which deals with criminal charges against persons of unsound mind.

Treatment of Gassed Soldiers.

Sir GEORGE GREENWOOD asked the Under Secretary for War whether, in view of the success achieved by the ozone treatment in relieving suffering and saving life in the cases of men who had been gassed, any steps had been, or would

be, taken to promote a general or more extended adoption of such treatment.—Mr. MACPHERSON replied: I am not aware of any ozone treatment for gassed cases,[1] but perhaps my honourable friend is alluding to oxygen treatment. The latter treatment is still on its trials, and although promising results have been obtained, it is not proposed to promote a general adoption of the treatment until further information as to its efficiency has been acquired.

Small-pox in London.

Mr. SNOWDEN asked the Under Secretary for War whether military police were stationed in Stepney, or in any other part of East London, to prevent soldiers coming in contact with cases of small-pox or with persons who might be developing the disease.—Mr. MACPHERSON replied: I am making inquiries and will communicate with my honourable friend as soon as possible.

Mr. SNOWDEN asked the President of the Local Government Board whether he would give information as to the ages of the small-pox patients now being treated in the hospitals of the Metropolitan Asylums Board and the vaccinal condition of each patient.—Mr. HAYES FISHER answered: The condition as to vaccination of the 34 cases in question at the time of exposure to infection was as follows: Under 5 years of age, 4 cases; all unvaccinated. 5–15 years of age, 10 cases; all unvaccinated. 15–25 years of age, 4 cases; all unvaccinated. 25–35 years of age, 6 cases; all vaccinated, none revaccinated. Over 35 years of age, 10 cases; all vaccinated, of which 2 are stated to have been revaccinated several (over 20) years previously. Of the total 34 cases, 15 were vaccinated or revaccinated after exposure to infection.

FRIDAY, APRIL 12TH.

Medical Men and Military Service.

The House considered in Committee the Military Service Bill.

Clause I. extends the obligation to military service to all male British subjects who have not attained the age of 51 years. It provides that in the case of duly qualified medical practitioners the obligation to service extends to those who have not attained the age of 56 years.

Mr. LEIF JONES moved as an amendment to omit the provision extending the age in the case of medical men to 56. He did so more with a view to obtain information than with a view to pressing the Government if they were unable to meet him in the matter. It seemed to him that the picking out of a particular profession for a special form of compulsion was a matter calling for particular justification. How far had the Government consulted the profession in this matter? It had not made less sacrifices than other sections of the community. The ranks of the profession at home had been considerably depleted, and there were districts which were very short of doctors.

Mr. J. H. THOMAS raised the question whether the needs of the civilian population were likely to be ignored under the arrangements contemplated.

Sir W. WATSON CHEYNE said that he wished to say a few words on behalf of the medical profession. He was quite sure that they would not raise any opposition to the proposal. If the Government, however, had come to the House and said they wished to have power to call on any man or woman of any age whose services they thought would be of any value to come and serve the country in this crisis it would have been better.

Mr. LEIF JONES: That is a very great power.

Sir W. WATSON CHEYNE: It is a very great power to give them, but I would trust them, because we must trust somebody. We are in a very tight corner. For myself, I not only trust them because we are compelled to do so, but because I mean it. I particularly trust my right honourable friend the Minister of National Service, because he belongs to the same profession as myself. Although I have said all this, it is of course an extremely serious thing both for the doctors themselves and for the community at large to call them up, and it will require a very great deal of care and tact to do it without doing injury. The medical profession really has sacrificed itself every bit as much as any other profession. There are very many young men whom I know who volunteered early in the war and are absolutely ruined as a result, financially and in health also. It is a great problem for these men how to reinstate themselves, because they have lost all their money and all their practice. Other men have taken their practices and they cannot start again. As long as they are young they do not lose hope, because they have plenty of time to reinstate themselves. That applies to the young men of from 20 to 30. But when you come to the men of 50 to 55, when a man of that age has lost everything he will never recover it. He never has a chance. He is 65 before he has done anything in the way of getting back his work.

[1] We refer Mr. Macpherson to Major George Stoker's letter in THE LANCET of April 13th, p. 550.

Mr. THOMAS: That applies to the workers as well.

Sir W. WATSON CHEYNE: It applies to the whole of the community. I am only speaking of the medical men. I cannot speak for others. Therefore I should like to impress upon the right honourable gentleman that in selecting these men he should have special regard to this point. As a matter of fact I suppose the reason for selecting these men is that they are wanted to take the places of others who have gone abroad. I do not suppose for one moment that there is any idea of putting men of 55 into the trenches. Although he is a doctor, a man has not the physical ability at that age to go into the trenches, but he may have the brains and experience to help the country at home. I would suggest that to a certain extent they should be part-time men. Put them in charge near their own homes—for instance, in London to work in a hospital, and let them give the greater part of their time there, and yet be able to go home and keep things together. That is the sort of solution which should be worked. It will be very hard if you take away a man from active practice and he has nothing whatever to do abroad. That has happened over and over again. Men who are working night and day in London have been sent abroad and have had nothing whatever to do—half an hour's work in a whole day. That breaks a man's heart.

An honourable Member: Clerical work.

Sir W. WATSON CHEYNE: Not even clerical work. They play golf most of the time. That is all I have to say. I only wanted to draw the right honourable gentleman's attention to this point, that as far as possible he should try to conserve doctors' practices, and at the same time getting as much work out of them as possible.

Sir C. SEELY feared that if powers were given to a Government Department to regulate the arrangements of medical men up to 56 injury might be done to the civil population.

Reply of the Minister of National Service.

Sir AUCKLAND GEDDES said: I feel that there is some misunderstanding about the general position in the mind of the Committee, and I intervene in order, if possible, to clear up points which appear to be confused. Under the Military Service Act, 1916 (No. 2), Section 7, there are powers to provide for the establishment of professional committees to deal with claims for exemption made by duly qualified medical practitioners. In other words, the dealing out, if I may use the expression, of the doctors to the armed forces of the Crown is, in fact, controlled by a professional committee. We have now reached a stage at which the professional committee says: "There are only two possibilities in front of us. Either we are to take away the only doctor remaining in the locality and leave no one, or we have to arrange when we take that man to move someone else into his locality." What happens is this. There are districts in this country where as the result of the withdrawal of medical men the supply available is very short, where the young fit man is really necessary just as in the trenches, and working practically as hard day and night. It is no good talking about putting an old man who does not know the district and does not know the people into that position. What would happen then would be that you would get an unsatisfactory medical attendance and the collapse of the doctor and you would have to move someone else in. It has been tried and we know. In the medical profession youth and fitness are now required for certain districts at home just as much as at the front. But there are great base hospitals where the work is not normally very hard, so it appears to me to be wise to see whether we cannot make use of some of the older men of the medical profession who are at present in this country. We have surveyed the whole country. We have plotted out in every town the number of medical men available and the number of the population whom they may have to look after, and we find that there are in some of the more comfortably off residential cities, not the great manufacturing cities, but cities where you get a retired class, doctors of about 50, 51, 52, 53, and 54 who are really in excess of local requirements. They have, comparatively speaking, a small number of possible patients at any time. There are alternative medical men. The professional committee which deals with this quite agrees that many of these men can go without dislocating either the public health service or the ordinary service of attendance on the sick, and these men are sufficiently fit for work in the base hospitals. The question for this committee therefore is—Are we going to meet the medical demand for the forces of the Crown in the way that will make least disturbance at home and the way it can be done without doing any harm whatever to the civil population, or are we going to leave the age for doctors at the same level as for other sections of the population and have a double shuffle going on? There are men always coming back from overseas to their practices, to release a partner, or something of the sort. We have that shuffle going on anyhow. If we have to move men from town A to town B, so that

the practitioners in town A may replace practitioners in town B who have gone into the service, we are going to create an enormous amount of trouble, to raise an enormous number of problems as to the adjustment of practices and compensation for removal from positions, and so on, which in my opinion can be avoided. If it were true that the doctors were now equally spread over the country in such a way that there was an equal possibility of medical attendance available for every person in civil life obviously you would not want to raise the age specially for doctors at all. You would have to take them just as you could. But the fact is that they are in pockets. They are unfortunately very thin in the great munition areas—far too thin. They are dangerously thin and you cannot take any more men out of those areas.

Mr. LEIF JONES: How far have you made an effort by appealing to the medical men to go into these districts which are scantily furnished?

Sir AUCKLAND GEDDES: We are continually appealing. It is a matter that has been going on for months of arrangement, writing to individual doctors, saying, "We have here a district in which, you are aware, there are only so many hundred people per doctor, and here is a district of so many thousand per doctor. Will you move? We can make arrangements for preserving your practice." A certain number of men with great public spirit have responded, but the medical profession is composed of human beings, and there are human beings who will do these things and there are human beings who say, "No, I would rather not." I am sorry to say that we have had a good many recently who say, "No, I would rather not." But that is not the reason. The object of this clause really is to enable the situation to be dealt with in the interests of the civil population. The administration of this power in regard to the medical profession is in no sense under the War Office until the medical man actually dons the uniform of the Royal Army Medical Corps. The administration of this provision is worked by the Ministry of National Service with the National Health Insurance Commissioners' Office, the Local Government Board, and the professional committees as the executive machinery for calling up and distributing the men, and I believe I am correct in saying that all these bodies are agreed as to the power we are asking for.

Comments and Questions.

Mr. PRINGLE expressed doubts whether it was entirely satisfactory that the decision as to whether a particular doctor in a particular locality should go should be solely in the hands of professional committees. There ought to be a lay element on these committees, which were composed of competitors, so as to make it certain that no professional consideration should enter into the matter of the decision. He pressed strongly that medical men in the Army should not be kept on clerical administrative work. The House ought to have absolute assurance that before the power was given for the calling up of men to the age of 55, thereby further aggravating the present shortage of doctors in the country, the War Office itself was going to use the doctors whom it had economically, and to use them for their proper work.

Brigadier-General MCCALMONT urged that in Ireland the Government would be able to economise a good deal in medical officers if there was a certain amount of give-and-take between the civilian element and the military authorities.

Sir J. BOYTON thought that the committee was entitled to a great deal more information before this very drastic step of taking men away from their civil practice was adopted.

Sir T. ESMONDE suggested that medical students who had put in three years' instruction would be useful to give first aid at the front.

Major D. DAVIES urged that Parliament should have been put in possession of the report of the committee which inquired into the medical service in France. He also asked that medical boards should be instructed to receive the certificate of a duly qualified tuberculosis officer as sufficient proof that a man was suffering from this disease, and that he should not be recruited for the Army.

Sir HENRY CRAIK said he was informed that the Central Medical War Committee and the Committee of Reference, composed almost entirely of leading members of the medical profession, were in favour of some sort of compulsion and organisation. While the medical profession fully welcomed this further organisation, there was a corollary that followed upon it, and that was that it imposed a very great responsibility on the authorities who were responsible for the organisation. These leaders of the profession and the great bodies were most anxious that the use made in the future should be better than that made in the past. There was no doubt a very considerable feeling that many of those who had been taken abroad and used in the service of the Army were not put to the most effective use.

Mr. T. M. HEALY observed that the Irish Local Government had been in conflict with the people in regard to the administration of military service. He therefore asked that for the protection of doctors who were getting on in years the University, the Royal College of Surgeons, and the Royal College of Physicians, or whatever the proper professional bodies were, should have some say in regard to the taking of medical men from their practices.

Sir H. NIELD asked the Minister of National Service to take care that a sufficient margin of medical men was reserved in order to continue the function of civilian examiners of medical boards.

Sir AUCKLAND GEDDES (replying to the debate) said: In reference to the point that has been raised as to consultation with the medical profession, there has been consultation with the medical profession and with the authorities which represent the central governing bodies, and there has been a very strong expression of opinion from certain members of the profession that the age should be up to 60. The Central Professional War Committee proposed and the representatives of these bodies finally voted by a majority in favour of 55, while there was a minority in favour of 60, so there is not the opposition from the profession itself to raising the age to this point. The honourable Member for Cork (Mr. Healy) misunderstands the way in which compulsory service affects the medical profession. Safeguards for the medical profession in Ireland will be worked along lines similar to those which are followed in England, where we have committees of representatives of the Royal Colleges, of the British Medical Association, &c., actually working as tribunals for the profession, and I cannot see that any other arrangement will be instituted in Ireland.

Mr. HEALY: The Local Government Board will be out of it.

Sir AUCKLAND GEDDES: They will not be out of it with regard to Local Government Board appointments, but they will be out of it with regard to the work of doctors in obtaining them in the armed forces of the Crown. In regard to the point raised by the honourable Member for Ealing (Sir H. Nield), of course that is absolutely essential. That is the whole point of this clause—to retain in civil life a sufficient number of doctors to carry out the services outside the sphere of the armed forces of the Crown, and it is to enable them to do that satisfactorily that we really want this age limit. There remains one point. That is, that the whole object of our present organisation is so far as possible to give part-time work to the medical profession.

The Committee divided, and the amendment was defeated by 249 votes to 95. Subsequently the clause was carried.

MONDAY, APRIL 15TH.

Artificial Arms.

Colonel ASHLEY asked the Pensions Minister whether, in view of the general opinion held by discharged soldiers who had lost an arm that the Carne arm was in most cases preferable to the Blatchford arm, he would take steps to issue such arm in all suitable cases.—Colonel GIBBS (on behalf of Mr. HODGE) replied: I must be mainly guided by the opinion and recommendation of expert orthopædic surgeons in determining what particular artificial limb shall be supplied. A Carne arm is supplied in all cases when specially recommended by the surgeons in charge of the case.

Invalids and Meat Rationing.

Sir C. KINLOCH-COOKE asked the Parliamentary Secretary to the Ministry of Food whether he was aware that the refusal of the Government to grant extra meat allowance on medical orders in cases of serious illness, except where a patient happened to be suffering from tuberculosis or diabetes, was generally regarded as arbitrary and unnecessary; and whether, in view of the demand for some amendment of this regulation, he could see his way to reconsider the matter and so prevent undue suffering and hardship to that section of the community suffering from disabilities other than tuberculosis and diabetes.—Mr. CLYNES answered: There is no evidence that any undue suffering or hardship is caused by the present regulation. If advantage is taken of the possibilities that are open in the use of fish, eggs, milk, meat extracts, and other unrationed foods no invalid need suffer in any way from the scarcity of butchers' meat. The Food Controller is acting throughout in consultation with the medical authorities on this matter, and we are now consulting these authorities as to whether some modification of the regulation should be made.

Sir C. KINLOCH-COOKE: Is the honourable gentleman aware that there is a very general opinion that the present regulations are arbitrary and unnecessary, and will he see that they are withdrawn in certain cases?—Mr. CLYNES: The answer I have given was based on opinion derived from medical and scientific sources.

Sir H. CRAIK: Is it under consideration by the department of the honourable gentleman to allow some extra ration on medical advice to patients who are suffering from the loss of blood from surgical operations?—Mr. CLYNES: Yes; I think my right honourable friend can conclude that from the last few words of my reply, that we are now in consultation with a view to see whether some arrangements can be made.

TUESDAY, APRIL 16TH.

Typhoid in Overseas Forces.

Answering Mr. CHANCELLOR, Mr. MACPHERSON (Under Secretary for War) wrote: In France during 1917 there were 266 admissions and 22 deaths from typhoid fever, and 715 with 16 deaths from paratyphoid fever. In Salonica during 1917 there were 511 admissions with 19 deaths for the enteric group of diseases.

Soldiers and Venereal Disease.

In the course of a reply to Sir W. DICKINSON, Mr. MACPHERSON wrote: The Army Council were desirous of applying Regulation 40 D to the whole male population, but were advised that such a measure could not be held to be *intra vires* the Defence of the Realm Regulations. In the case of a soldier it is an offence punishable with two years' imprisonment with hard labour for a soldier suffering from venereal disease to conceal it. Any woman who has been infected has only to communicate with his commanding officer, when the soldier would be immediately inspected, and if found to be suffering from the disease would be dealt with by court martial.

WEDNESDAY, APRIL 17TH.

A Ministry of Health.

Mr. SHIRLEY BENN asked the Minister of Reconstruction whether he was ready to introduce a Bill establishing a Ministry of Health.—Dr. ADDISON replied: The negotiations in which I have been engaged in this matter have now been concluded. Any decision, of course, must be materially affected by other demands on the time of the House.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
THURSDAY, April 25th.—4.30 P.M., Bakerian Lecture:—Hon. Sir Charles Parsons, K.C.B.: Experiments on the Production of Diamond.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MEETINGS OF SECTIONS.
Friday, April 26th.
STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—A. S. Blundell Bankart, G. E. C. Pritchard, C. P. Lapage): at 4.30 P.M.
Exhibition of Cases.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.
WEDNESDAY, April 24th.—4.30 P.M., Paper:—Major Sir Robert Armstrong-Jones, R.A.M.C.: Mental Effects of the War and their Lessons in Social and Medical Reconstruction.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
MONDAY, April 22nd.—5 P.M., Museum Demonstrations in Pathology:—Mr. S. G. Shattock: III., Malignant Tumours.
The demonstrations are open to Medical Students and Practitioners. First-Aid and Ambulance Students, desirous of attending, will be admitted.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
Clinics each week-day at 2 P.M., Wednesday, Friday, and Saturday also at 10 A.M.
(Details of the Post-Graduate Course were given in the issue of March 30th.)

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Out-patients each day at 2.30 P.M.
(Details of the Post-Graduate Course were given in the issue of April 6th.)

THE THROAT HOSPITAL, Golden-square, W.
MONDAY, April 22nd.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BOURNE, A. W., M.B., B.C., has been appointed Assistant Surgeon to the Samaritan Free Hospital for Women.

DRAKE, L. A., M.B., C.M. Edin., Certifying Surgeon under the Factory and Workshop Acts for the Clwt y Bont District of Carnarvon.

STEDMAN, T. B., barrister, M.D. Lond., Deputy Coroner for North-East London.

WHITEFORD, C. H., M.R.C.S., L.R.C.P., Medical Referee for County Court Circuit No. 58 (Plymouth and District).

WOOD, G. B., M.R.C.S., L.R.C.P. Lond., Certifying Surgeon under the Factory and Workshop Acts for the Misterton District of Nottingham.

Vacancies.

For further information refer to the advertisement columns.

Birkenhead Borough Hospital.—Hon. P., also Hon. S.
Brighton Hospital for Women.—H.S. £100.
Brighton, Royal Sussex County Hospital.—H.P. £100.
Bristol Royal Infirmary.—H.P. and H.S. £120.
Dundee Corporation.—Temp. Asst. Tuberculosis Officer. £350.
Edinburgh, Craiglockart Poorhouse and Hospital.—Asst. M.O. £250.
Glasgow Corporation.—Temp. Asst. Tuberculosis Officer. £400.
Hospital for Women, Soho square, W.—Res. M.O. £100.
Huddersfield Royal Infirmary.—Res. H.S. £250.
Liverpool, Royal Southern Hospital.—Hon. S.
Margate, Royal Sea Bathing Hosp. for Surgical Tuberculosis.—S. £200.
Manchester, Swinton and Pendlebury Urban District Council.—Temp. M.O.H. and Sch. M.O. £450.
Newark Hospital.—Female H.S.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Resident appointments.
Northampton General Hospital.—Jun. H.S. £150.
Notts Education Committee.—Asst. School M.O. £400.
Plaistow Fever Hospital, E.—Female M.O. £300.
Queen Mary's Hospital for the East End.—H.S.
Recuperative Hostels for Sailors and Soldiers Invalided with Nerve Strain, W.—Res. M.O. £400.
Royal Eye Hospital, S.E.—H.S. £150.
Sheffield Royal Infirmary.—H.S. £120.
South London Hospital for Women, S.W.—Female Dent. S. £25.
Stoke-on-Trent, North Staffordshire Infirmary.—Sec. and H. Gov. £600.
Swansea Education Committee.—Asst. Sch. M.O. £400.
West Ham County Borough.—Temp. Tuberculosis Officer. £500.
Winchester City.—Asst. M.O.H. and School M.O.H. £400.
York, County Hospital.—Fem. H.P. £200.

THE Home Secretary gives notice of vacancies for Medical Referees under the Workmen's Compensation Act, 1906, for the Canterbury, Faversham, Ashford, and Tenterden and Cranbrook County Courts in Circuit No. 49. Applications for the post should be addressed to the Private Secretary, Home Office, not later than May 2nd.

Births, Marriages, and Deaths.

BIRTHS.

BARTON.—On April 3rd, at Wellington House, Regent's Park, London, the wife of Captain Oswald Barton, R.A.M.C. (T.C.), of a son.
CAMPBELL.—On April 14th, at Beaufort-mansions, Chelsea, S.W., the wife of Fleet-Surgeon J. A. Campbell, M.D., R.N., of a son.
LAWSON CRABB.—On April 9th, at Cumberland-road, Preston, Brighton, the wife of Captain R. Lawson Crabb, M.D., R.A.M.C., of a son.
OVERBURY.—On April 7th, at Guildhall-street, Bury St. Edmunds, the wife of H. K. Overbury, R.A.M.C., of a daughter.
SHANN.—On April 10th, at Inglewood, Colney-avenue, Woking, Violet, wife of Captain Gerald Shann, R.A.M.C., of a daughter.

MARRIAGES.

EDMOND—HEADLAM.—On April 10th, at St. Thomas's, Hanwood, William Square Edmond, Captain, R.A.M.C., to Margaret Ellen, elder daughter of Major-General J. Headlam and Mrs. Headlam, of Hanwood, Shropshire.
JONES—JONES.—On April 3rd, at St. Cadvan's, Towyn, by the Rev. N. Williams, D. W. F. Jones, M.B., Temporary Captain, R.A.M.C. (late R.M.O., Brompton Chest Hospital), to Megan, eldest daughter of R. Jones, Esq., M.R.C.V.S., and Mrs. Jones, Towyn, North Wales.
RICHARD—ROTHBARTH.—On April 10th, at St. Mark's, North Audley-street, Major G. H. Richard, R.A.M.C., to Dorothy Dundas, younger daughter of Mr. and Mrs. J. Rothbarth, of Quex-road, West Hampstead.
WHEELER—HENRICI.—On April 6th, at All Saints' Church, Southport, Francis James Wheeler, M.R.C.S., L.R.C.P., to Marie Louise, daughter of the late Signor Henrici, of Genoa.

DEATHS.

ANDERSON SMITH.—On April 5th, at "Jhompri Tal," Brome, Suffolk, Dr. Anderson Smith, L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., late M.O.H., Kandy, Ceylon.
HUNTER.—On March 25th, killed in action, Captain Douglas William Hunter, D.S.O., R.A.M.C., attached West Yorks.
LOCH.—On April 9th, at Kilmarnock, Guildford, Deputy Surgeon-General James H. Loch, M.D., I.M.S. (retired), in his 88th year.
OWEN.—On April 13th, at his residence, Gyllyngvase House, Falmouth, James Francis Holland Owen, J.P., L.R.C.P., M.R.C.S., aged 57 years.
WALLACE.—On March 28th, killed in action, Major Joseph Stephen Wallace, M.C., R.A.M.C. (T.F.), aged 31.
WILSON.—On April 8th, from wounds received in action on March 28th, Charles Edgar Andrew Wilson, Captain, R.A.M.C., attached Rifle Brigade, aged 41.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

The following journals, magazines, &c., have been received:—Dublin Journal of Medical Science, Journal of Laryngology, Rhinology, and Otology, Journal of State Medicine, Canadian Journal of Medicine and Surgery, Boletin Oficial de la Secretaria Sanidad y Beneficencia, American Journal of Ophthalmology, Albany Medical Annals, Review of Neurology and Psychiatry, Annali d'Igiene, Medical Review, Canadian Medical Association Journal, American Review of Tuberculosis, British Dental Journal, Canadian Practitioner.

EDITORIAL NOTICES.

In consequence of the pressure on our space and the shortage of paper, the Editor may be compelled to abbreviate communications, as an alternative to their rejection, when time does not allow them to be reconsidered by their authors.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C. 2.

Communications, Letters, &c., to the Editor have been received from—

A.—Messrs. Henry Aitken and Co., York; Lieut-Col. J. G. Adami, A.D.M.S.

B.—Major W. Byam, R.A.M.C.; Dr. J. S. Bury, Manchester; Mr. J. Boyton, Lond.; Capt. H. W. Bayly, R.A.M.C (T.); Mrs. L. Beveridge, Aberdeen.

C.—Sir James Cantlie, K.B.E.; Dr. A. S. Cobbledick, Lond.; Dr. Barbara G. R. Crawford, Chester; Dr. S. D. Clippingdale, Lond.; Chicago School of Sanitary Instruction; Mr. J. Cabburn, Lond.; Dr. C. W. Chapman, Lond.; Major R. Carslaw, R.A.M.C.(T.).

D.—Decimal Association, Lond.

E.—Mr. G. J. Edwards, Blackhill.

F.—Mr. G. R. Footner, Khartoum; Capt. W. Fletcher, R.A.M.C.; Dr. E. R. Fothergill, Hove.

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L.—Dr. A. S. Leyton, Oxford; London County Council, Clerk of; Local Government Board, Lond.; Fleet-Surg. G. M. Levick, R.N.

M.—Medical Research Committee, Lond.; Ministry of National Service, Lond.; Capt. J. F. McMillan, R.A.M.C. (retd.); Dr. P. Macdonald, York; Major H. F. Marris, R.A.M.C.; Mr. J. MacMunn, Lond.; Rev. J. Marchant, Lond.; Dr. A. Morison, Lond.; Dr. P. Manning, Springfield, Mass.; Metropolitan Asylums Board, Lond.

N.—Mr. C. E. Newbon, Lond.; Dr. D. Nabarro, Lond.

O.—Dr. H. V. O'Shea, Lond.; Dr. W. J. O'Donovan, Lond.; Mr. J. F. O'Grady, Dublin; Capt. S. A. Owen, R.A.M.C.

P.—Mr. J. E. Purvis, Cambridge; Prof. F. G. Parsons, Lydney; Major W. Pearson, R.A.M.C.

Q.—Queen Charlotte's Lying-in Hospital, Lond., Sec. of.

R.—Royal Society of Arts, Lond.; Dr. J. W. Rob, Weybridge; Royal Academy of Medicine in Ireland, Dublin; Royal Microscopical Society, Lond.; Royal Society, Lond.; Royal Institution of Great Britain, Lond.; Dr. B. A. Richmond, Lond.; Dr. J. D. Rolleston, Lond.; Royal Medical Benevolent Fund, Lond., Sec. of; Royal Society Natural Products Committee, Lond., Sec. of.

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T.—Major P. Turner, R.A.M.C.; Mr. L. L. Thain, Gloucester.

U.—United States Public Health Service, Washington.

W.—Mrs. Wood-Hill, Beccles; Dr. O. K. Williamson, Lond.; Mr. Welch, Durham; West London Hospital Post-Graduate College; Col. Sir Almroth Wright, C.B.; Mr. W. Warren.

MANAGER'S NOTICES.

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Messrs. Wm. Wood and Co., of New York, have relinquished their Agency for the supply of THE LANCET in the United States. The Manager of THE LANCET will be pleased to supply copies direct from the London Office to subscribers in the United States at the strictly prepaid rate of $8 for twelve months. Subscriptions may commence at any time. Drafts and Money Orders should be made payable to the Manager, Mr. CHARLES GOOD, 1, Bedford-street, Strand, London, W.C. 2, England.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C. 2, are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

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TO COLONIAL AND FOREIGN SUBSCRIBERS.

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The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied.

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Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

NEWSPAPERS FOR NEUTRAL COUNTRIES.

Newspapers are not at present being sent forward to neutral European countries unless posted direct from the office of publishers or newsagents who have obtained permission from the War Office for this purpose. The Publisher of THE LANCET has obtained the required permission, and he will forward copies direct from the Office to any neutral country on receipt of instructions.

METEOROLOGICAL READINGS.

(*Taken daily at 8.30 a.m. by Steward's Instruments.*)

THE LANCET Office, April 17th, 1918.

Date.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
April 11	...	65	56	42	46	46	Raining
" 12	...	116	61	45	45	48	Cloudy
" 13	...	79	52	45	47	50	Overcast
" 14	...	56	48	39	42	45	Cloudy
" 15	...	65	49	37	41	42	Overcast
" 16	0·03	47	44	34	37	37	Snowing
" 17	0·31	50	45	37	43	44	Overcast

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

BOOKS, ETC., RECEIVED.

AMERICAN PEDIATRIC SOCIETY, Philadelphia.
Transactions, 1917. Edited by O. M. Schloss, M.D. Vol. XXIX.

DENT, J. M., London.
New Towns after the War. By New Townsmen. 1*s.*

FIFIELD, London.
Married Love. By Marie C. Stopes. With preface by Dr. J. Murray and letters from Professor E. H. Starling and Father S. St. John. 5*s.*

HOEBER, PAUL B., New York.
Studies in the Anatomy and Surgery of the Nose and Ear. By Adam E. Smith, M.D. $4.

LEA AND FEBIGER, Philadelphia and New York.
Eye, Ear, Nose, and Throat. By H. C. Ballenger, M.D., and A. G. Wippern, M.D. $3.50. Second edition.
Diseases of Children. By G. M. Tuttle, M.D., and P. G. Hurford, M.D. $3.50.
Nutrition and Clinical Dietetics. By H. S. Carter, M.D., and Others.

LONGMANS, GREEN, AND CO., London.
An X Ray Atlas of the Skull. By A. A. R. Green, M.B., B.S. 10*s.* 6*d.*
Welfare and Housing: A Practical Record of War-time Management. By J. E. Hutton. 5*s.*

ST. JOHN AMBULANCE ASSOCIATION, London.
First Aid to the Injured. By James Cantlie, F.R.C.S. 32nd ed.

SAUNDERS (W. B.) COMPANY, Philadelphia and London.
Tumors of the Vervus Acusticus and the Syndrome of the Cerebellopontile Angle. By Harvey Cushing, M.D. 21*s.*

WARREN, WHITNEY, Institut de France, Paris.
The Just Claims of Italy. By Whitney Warren, A.M. Har. 50 cents.

WRIGHT, JOHN, AND SONS, Bristol.
Fitting Out and Administration of a Naval Hospital Ship. By Ed. Sutton, Fleet surgeon, R.N.

Notes, Short Comments, and Answers to Correspondents.

COLONIAL HEALTH REPORTS.

Basutoland.—Mr. C. E. Boyes, Government Secretary, reporting on the affairs of this territory for the year 1916–17, states that in the Government hospitals and dispensaries 1999 in-patients and 26,214 out-patients were treated, as compared with 1841 and 23,575 respectively in the previous year.

During the early part of 1916 there was an outbreak of plague in the Orange Free State, the nearest cases being about 40 miles from the Basutoland border, but the strictest possible precautions to prevent the introduction of the disease were taken and apparently proved effectual. Enteric fever was less prevalent than in recent years, and this improvement is attributed to the extensive use of anti-typhoid inoculation. The serum is obtained from the South African Institute of Medical Research, and out of some 5400 inoculations there were only 2 cases of severe reaction. Bacillary dysentery was again very prevalent, and a few cases of liver abscess were noted. There has been no apparent increase in the incidence of tuberculosis. In the Leper Settlement on April 1st, 1916, there were 178 male and 167 female inmates. During the year 72 new cases were admitted; 15 patients were discharged as possibly arrested cases; there were 60 deaths, 10 births, and 47 deserters. On the other hand, 64 deserters returned to the settlement. On March 31st, 1917, there were 181 male and 182 female inmates.

Bechuanaland.—In the medical section of his report on the Protectorate for the year 1916–17 Mr. J. Ellenberger, acting Government Secretary, says:—

There falls, in the first place, to be recorded a mild and generally favourable incidence as regards the prevailing disease (malaria) within the old administrative bounds. Reports come in from remote and obscure places which point to variations in prevalence and severity, due partly to what may be stated as climatic and telluric influences. But, this notwithstanding, the average conditions for the whole territory during the past year have been favourable. Amongst the rank and file of those in the Government service the same disease continues to be the principal cause of illness, and sometimes temporary disablement. Officers and all grades, however, escaped with nothing worse than the recurrent attacks habitual to old residents. The state of health in such cases would be more aptly described as one of a chronic state of remission of—rather than freedom from—disease; firing up now and again, subject to changes of weather and a decline in resisting powers, to the level of a tertian or quartan, whilst the individual may be unconscious of the existence of disease till a characteristic state of cachexia declares it. An outbreak of small-pox—called here Amaas—occurred last year at various places within the Territory, and assuming an epidemic form spread so as to affect a large proportion of the native population. Whether it originated in the Protectorate or in the Union of South Africa is not clear, but a particular wave of the disease spread across the Western Transvaal and the Protectorate. The Administration started a vaccination campaign under very great difficulties, and in a very short time a protected zone was created along the eas ern border. Eventually the disease was confined within the particular area of invasion and finally stamped out. Altogether over 10,000 natives were vaccinated, whilst probably close upon 20,000 suffered from the disease, so that the chances of contagion from within or without and of future epidemic outbreaks are for the present reduced to a minimum.

An important departure has been made, providing, so far as means will for the present allow, for the free treatment of indigent syphilitics. A quantity of mercurial ointment has been requisitioned for distribution by the magistrates, police, missionaries, and other responsible persons. There are fears, if not indications, that syphilis is on the increase.

BABY WEEK, 1918.

THE Executive Committee of the National Baby Week Council have recommended that Baby Week celebrations should be organised this year from July 1st to 7th, but that local committees should arrange a date convenient to their district. It is also suggested that a small committee of representatives of religious denominations should be formed in order to get into touch with places of worship all over the kingdom, and that good work could also be done through the adult schools, the women's institutes, the local branches of the Mothers' Union, of the British Women's Temperance Association, and similar bodies. In moving the adoption of these suggestions at a meeting of the National Baby Week Council held at Armitage Hall, Great Portland-street, London, on April 11th, Dr. Eric Pritchard pointed out the urgency of our present need under war conditions, adding that in spite of present difficulties, the agitation for the conservation of child life must be energetically prosecuted.

THE TOLL OF THE RAT.

THE appeal to farmers sent out by Viscount Chaplin and Lord Lambourne, urging drastic measures to suppress the existing plague of rats, quotes a statement by Sir James Crichton-Browne made in 1908, that the value of the loss of food-supplies caused by rats amounted in England alone to something like 15 millions sterling a year, representing two or three times as much now. But the rat is not only a destroyer of food and other valuable property, but is an agent in the dissemination of disease—e.g., bubonic plague, trichinosis, and in all probability certain infectious diseases of the trenches. In an article published in THE LANCET of Feb. 15th, 1908, attention was called to the gravity of the menace to public health due to the rat and to the efforts which had then been adopted to meet it.

Reference may usefully be made to "The Book of the Rat," published by the proprietors of the "Liverpool Virus for the destruction of rats, mice, and voles." The booklet contains a motley assemblage of information concerning the habits of rats, the damage they produce, and the methods of reducing the vermin as practised in earlier times and in the more recent past.

THE INFANTILE DEATH-RATE.

A REPORT of the Birmingham corporation health committee states that from inquiries made by the medical officer of health it is clear that a saving of life has taken place chiefly amongst infants between one month and six months, while in the first few weeks of life there has been little improvement. The medical officer of health's investigations also show that the number of babies who die in the first week after birth is exceedingly large, and that the number who are stillborn is still larger. The causes of this great waste of potential and actual human life are, the report states, obscure. It does not appear that environment plays any part in it in its earlier stages, and it would seem that more definite medical knowledge is necessary before any effective steps to combat it can be taken. In the meantime the committee feel that any action which draws attention to the national loss and promises light on it would be useful. They have therefore asked the Local Government Board to give consideration to the advisability of making all conceptions which terminate in the death of the fœtus compulsorily notifiable. The committee are of opinion that such a step would concentrate attention upon this important subject and lead to the necessary fuller study of it.

LEISHMANIASIS TREATED WITH MARTINDALE'S ANTIMONY OXIDE INJECTION.

IN continuation of his successful treatment of American leishmaniasis, of which we published a note in THE LANCET of Sept. 1st, 1917 (p. 355), Dr. Edmundo Escomel, of Arequipa, Peru, sends an account of four further cases so treated:—

(1) Patient, a Spaniard, 38 years of age, Leishman cancer at the lower dorsal region of the forearm. Commencement of lesions on the nasal sub-septum. Injections of solution until arriving up to a total quantity of 30 c.cm., supplemented by local treatment with tartar emetic. Cure.

(2) Peruvian, 22 years of age. Initial lesion two years ago at the lower and external part of the left leg. Intense lesions of the entire mucous membrane of the nose, of the cavum, and of the velum palati. 58 c.cm. of the solution were given by the intravenous way with apparent cure. He continues the treatment in order to avoid relapses.

(3) Peruvian, 23 years of age. Initial ulcer on the outer edge of the left foot. The mucous membranes of the nose, of the cavum, and of the velum palati and of the tonsils much ulcerated. After having been given 35 c.cm. of the solution the patient considered himself cured. Two months afterwards there was a relapse, commencing on the foot and on the middle portion of the velum palati. After a few injections the ulcers healed, but intravenous injections were continued by way of precaution until 80 c.cm. of the solution had been administered.

(4) Peruvian, 20 years of age. Leishmaniasis of the contour of the left ear. 15 c.cm. of the solution by intravenous injections of 1 or 2 c.cm. per injection, and two touches with saturated solution of tartar emetic to effect the cure.

The agent used in each case was Martindale's solution, containing 1/100 gr. of antimony oxide per c.cm. and half its volume of glycerine.

THE DECIMAL ASSOCIATION.

AT the annual meeting of the Associated Chambers of Commerce, held recently, a motion was passed urging the Government to pass into law the Decimal Coinage Bill prepared by the Executive Council of the Associated Chambers of Commerce in conjunction with the Institute of Bankers and the Decimal Association. Lord Southwark will introduce the Bill into Parliament at the earliest possible moment, and those interested should help the Decimal Association to demonstrate that the weight of public opinion is behind the movement.

IN the sixty-sixth annual report (for the year ending Dec. 31st, 1916) of the Inspectors of Lunatics in Ireland it is stated that the proportion of cases admitted during the year to district, auxiliary, and private asylums and institutions considered to be due to mental stress had fallen off as compared with the previous year, the number of cases in which this cause played any part forming 17·5 per cent. of the total admissions, as against 19·2 per cent. in 1915. The percentage in which mental stress was the principal cause was now 11·9, or practically the same as before the war.